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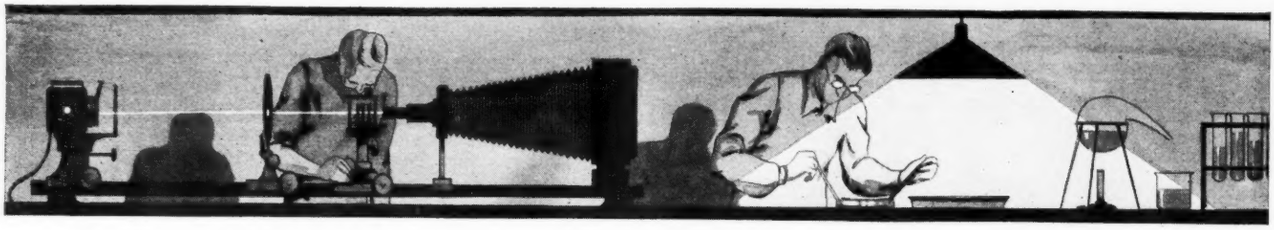

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AUTOMOTIVE INDUSTRIES

VOLUME 59 *Philadelphia, Saturday, August 25, 1928* NUMBER 8

Industry's Gain in Earnings Result of *Price Policy*

Profits of 18 car and truck companies increased 24.4 per cent in first 6 months. Parts companies also prosperous.

By JOHN C. GOURLIE

GAINS in automotive production in the first six months of 1928 brought the corresponding gain in earnings for the individual companies, a situation that has not always existed in the past. In the case of car and truck manufacturers, indeed, the increase in profits has been somewhat greater than the increase in volume of business.

Total earnings for the 18 vehicle companies listed in the accompanying table for the first six months of 1928, or the nearest fiscal period, were $215,534,103, against $173,610,179, an increase of 24.4 per cent. This group, it will be noted, is responsible for a very large proportion of the non-Ford business of the industry, so the compilation may fairly be considered typical.

For the non-Ford group as a whole, including the companies for which earnings statements were not available, six months' production this year exceeded the corresponding period of 1927 by 21.7 per cent. It is natural that, given stable prices, earnings should gain faster than production, since overhead expense is more or less a fixed quantity, varying little with fluctuations in output.

Elimination of General Motors Corp. from the figures does not materially affect the ratios involved. For the group exclusive of General Motors, earnings for the half year were $54,267,129, against $44,359,972, a gain of 22.2 per cent.

Hardly less satisfactory operations are revealed in the financial reports of the parts companies. The 15 tabulated had earnings of $19,934,274 against $16,496,652 in the first half of 1927, a gain of 20.8 per cent. It is apparent that for this group also, comprising many but by no means all the leading suppliers of equipment, larger volume was accompanied by larger earnings.

The figures afford some basis for the thought that the automotive industry has almost entirely recovered from the period when the customary answer to falling sales was another cut in prices, and when profits per unit were declining to an alarming extent. A different attack upon sales problems seems to be observable, not only among car and truck manufacturers, but also among the

Motor Car and Truck Manufacturers

	Earnings for the first six months		Per Common Share		Loss or Gain
	1928	1927	1928	1927	%
Auburn	$360,153	$865,869	$2.68	$9.39	—58.5
Brockway	776,326	536,144	3.73	2.40	44.8
Chrysler	11,690,746	10,116,794	3.98	3.42	15.5
Federal	214,203	447,556	.45	.99	53.0
Gardner	201,574*	140,958*	.80	.56	43.5
General Motors	161,267,974	129,250,207	9.00	7.17	24.8
Graham-Paige	1,878,502	—1,426,463	1.59	...	...
Hupp	4,283,221	1,147,722	4.15	1.14	273.0
Mack	2,830,055	3,677,740	3.84	4.36	23.0
Nash	5,372,851†	9,491,735†	1.96	3.47	—43.4
Peerless	—597,528	78,508	...	.30	...
Packard	12,270,036†	5,187,850†	4.08	1.72	113.2
Pierce-Arrow	—634,000	115,382	...	...	...
Studebaker	8,583,296	8,472,383	4.44	4.38	1.31
Stutz	440,935*	123,025*	1.90	.53	258.2
White	1,161,830	870,369	1.45	1.08	33.5
Willys-Overland	5,641,517	5,238,053	2.01	1.83	7.0
Yellow	—207,588	723,653	...	...	...

* Before taxes.
† Six months ended May 31.

makers of parts, accessories and the equipment that goes into the fabrication of motor vehicles.

There is, of course, always the possibility that an unforeseen slump in sales would cause some alarmed producer to slash his lists and that others would follow suit. But against this possibility there is the fact that more than 18 months have gone by without a recurrence of the previous waves of price reductions.

Parts and Accessory Manufacturers

	Earnings for the first six months		Per Common Share		Loss or Gain
	1928	1927	1928	1927	%
American Bosch	$103,454	$80,466	$0.49	$0.39	28.7
Bohn Aluminum	1,644,089	603,163	4.70	1.73	166.0
Briggs	2,035,553	3,033,281	1.00	1.51	—44.0
Continental	807,498†	147,085†	.46†	.08†	450.0
Eaton Axle	770,955*	579,345*	3.08*	2.32*	33.2
Gabriel	275,210	839,070	1.38	4.20	—67.2
Kelsey Hayes	477,066	573,164*	1.03	1.26*	—20.2
Moto Meter	351,051	655,852	1.75	2.12	—46.5
Motor Wheel	1,331,574	1,036,957	2.42	1.81	...
Ross Gear	373,961	245,545	2.49	1.64	52.2
Spicer	854,955*	713,631*	2.53*	1.68*	19.8
Stewart-Warner	3,613,334	2,570,926	6.02	4.28	40.5
Timken-Detroit	716,410	660,011	.70	.63	8.5
Timken Roller	6,395,572	5,406,834	5.32	4.50	18.2
Wire Wheel	458,802	190,392	.99	.30	141.0

* Before taxes.
† Six months ended April 30.

In view of the fact that 1928 is a year of heavy business for the automotive industry, it may be remarked that there is no real reason why prices should not be maintained and profits increased. On the contrary there are few companies that could not have handled an even greater volume of business, and many of them might have cut prices if they had thought that such a policy was sound.

A few instances of lowered prices come to mind as having taken place during the 18 months to the end of June, 1928, but in almost every case the true significance of the reduction was that the car was entering a lower price class, having been redesigned with this end in view.

Close analysis of the situation, therefore, appears to show few if any, instances where price appeal has been used as a sales stimulus, rather than quality appeal and other sound merchandising policies. Quality, so far as automotive products are concerned, is only another name for service, and service is something that American consumers have always been willing to pay for.

Turning to Service Appeal

A new realization of this factor is observable in other lines of business, stimulated, perhaps, by the example set by our own industry. The chain stores, for instance, have been the leading exponents of price merchandising yet even there some reaction in favor of greater stress upon service is current.

The H. C. Bohack Co., operating 435 grocery stores, in line with the new trend has adopted some sweeping changes in its organization, and the current sales policy, and the reasons for the changes, as brought out by Henry C. Bohack, Jr., in an article in *Printers' Ink*, might just as well have been applied to the automotive industry. Says Mr. Bohack:

"The American household is again seeking service. The high price of the war period centered the attention of the housewife on the prices she was paying for her food and necessities. She thought at first they were outrageous, and began to shop around.

"Here was the chain store's big opportunity, and we all made the most of it—through the elimination of service and filling the housewife's desire for lower prices.

"With the war over, prices fell, and the country was started on the upward trend to greater prosperity. Slowly the housewife has been adjusting herself to the new conditions, and she has begun again to buy service. We are getting back to the pre-war days when quality and service took precedence over price."

If we have appraised the situation correctly, the automotive industry was probably the first to detect the fallacy of price as the cornerstone of marketing, antedating by a considerable period such changes in policy as are indicated by Mr. Bohack's statement.

The industry, in fact, seemed to come to a realization of its position and opportunities more than a year ago, warned by the experiences of 1926. In that year the production of a group of the most important manufacturers exclusive of General Motors expanded 11.2 per cent over the the 1925 level but profits, as the result of price-cutting, were 37 per cent less. The companies suffered not only from lower profits, but from drastic declines in the stock market valuation of their securities.

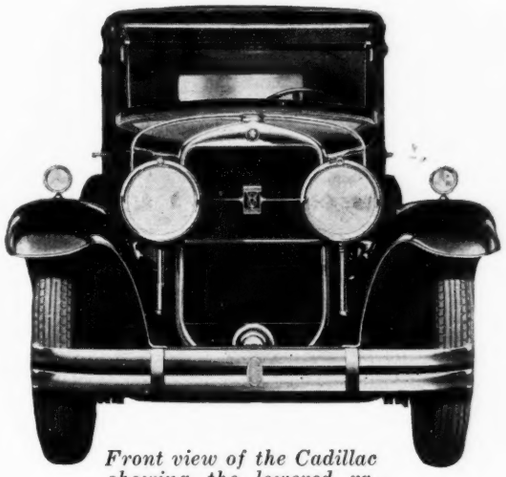
Commenting on these figures, *Automotive Industries* urged the maintenance of price schedules and pointed out that:

"The competitive situation which exists at the present time among passenger car companies is not to be denied. Sometimes in past years individual companies have felt called upon to make temporary moves which they themselves may have recognized as not being wholly in harmony with the best long-swing merchandising policies. Too often, however, some analysts of the industry believe, the effectiveness of such attempts to gain temporary advantage are overestimated. Car price cuts, for instance, they point out, so often merely result in similar cuts by all competitors in a given group with the result that the prices simply are stabilized on a lower level with no individual company much the gainer and the additional profit mostly in the pockets of the public.

If unit profits continue to be held at a level where recessions in business will not prove disastrous, manufacturers will find themselves in better condition to take of stockholders and dealers. Earnings rather than losses will continue, and there will be no need to force dealers to take cars that cannot be readily sold.

The automotive industry, with products of individual style and merit, susceptible of quality appeal, is peculiarly fitted to take the leadership in bringing American business generally out of the morass of profitless prosperity. If present trends continue, all branches of the industry will present an inspiring example to manufacturers in other lines.

Cadillac-LaSalle 1929 Cars Have New Transmissions



Front view of the Cadillac showing the lowered radiator cap and parking lamps now mounted on the fenders

Innovation in brake design and power increases also featured in new models.

By A. F. Denham

OUTSTANDING among the changes in Cadillac and LaSalle cars for 1929 are a non-flashing transmission, a new idea in mechanical brake design developed by Cadillac engineers, power increases in both engines, especially in the LaSalle, adoption of shatter-proof glass, double-acting hydraulic shock absorbers for Cadillac models, adjustable front seats and refinements in body design.

On the LaSalle line all closed models are now produced on the longer, 134 in. wheelbase, with prices from $45 to $100 higher. Open models are continued on the 125 in. wheelbase chassis and are from $100 to $190 lower in price. On the Cadillac-Fisher line open models are unchanged in price, while closed models are $100 higher. The Cadillac-Fleetwood line, which has been fairly completely revised and now also includes a convertible touring-sedan, is also slightly higher in price.

The new transmission incorporated in both models, and called the "Syncro-Mesh" silent shift transmission, entirely eliminates any attention to relative engine and propeller shaft speeds when shifting either up or down between intermediate and high, a down shift also involving no double clutching to effect it. It thus enables a quick shift into intermediate for traffic conditions and for steep hills. The shift remains standard, and the only difference in operation is in timing the movement of the control lever. Instead of a jerky movement with hesitation in neutral, the movement of the lever must be smooth and deliberate enough to give the synchronizing mechanism a chance to act.

The major difference in design is that the second speed gear, instead of being splined to the main shaft, rides on a bronze bushing splined to the shaft, being free to turn and in constant engagement with its corresponding gear on the countershaft. The same applies to the drive shaft pinion. Each of these two gears (drive-shaft pinion and intermediate speed gear) has a tapered bronze cone secured to it. When a shift to second is made, for instance, a steel drum first engages this cone in a clutch action, being moved forward (or back) by a rocking yoke mounted on trunnions to the sides of the transmission case and the steel drum, being splined to the mainshaft, forces the second speed gear to turn at the same speed as the main shaft.

A coupling gear, which takes the place of the usual shifter gear, splined to the main shaft and located between second and high speed gears, serves to engage both the intermediate and the high speed gears, both of these having internal teeth cut in an extension located inside the cone clutch. Since the coupling gear must clear the steel clutch ring the latter is given a spoked mounting and the coupling gear is notched to clear the spokes.

Cadillac-LaSalle Models and Prices

LaSalle-Fisher (125 in. wheelbase)

	New Price	Old Price
2-pass. Roadster	$2345	$2485
4-pass. Phaeton	2295	2485
4-pass. Sport Phaeton	2875	2975

LaSalle-Fisher (134 in. wheelbase)

2-4-pass. Coupe*	$2495	$2450
2-4-pass. Con. Coupe*	2595	2550
5-pass. Sedan*	2595	2495
5-pass. Family Sedan*	2450	2350
5-pass. Coupe	2625	same
7-pass. Sedan	2775	same
7-pass. Imperial	2875	same
5-pass. Con. Lan. Cab.	2725	new

LaSalle-Fleetwood (125 in. wheelbase)

Transf. Town Cabriolet.	$4800	$4700

LaSalle-Fleetwood (134 in. wheelbase)

	New Price	Old Price
Transf. Town Cabriolet*	$4900	$4700

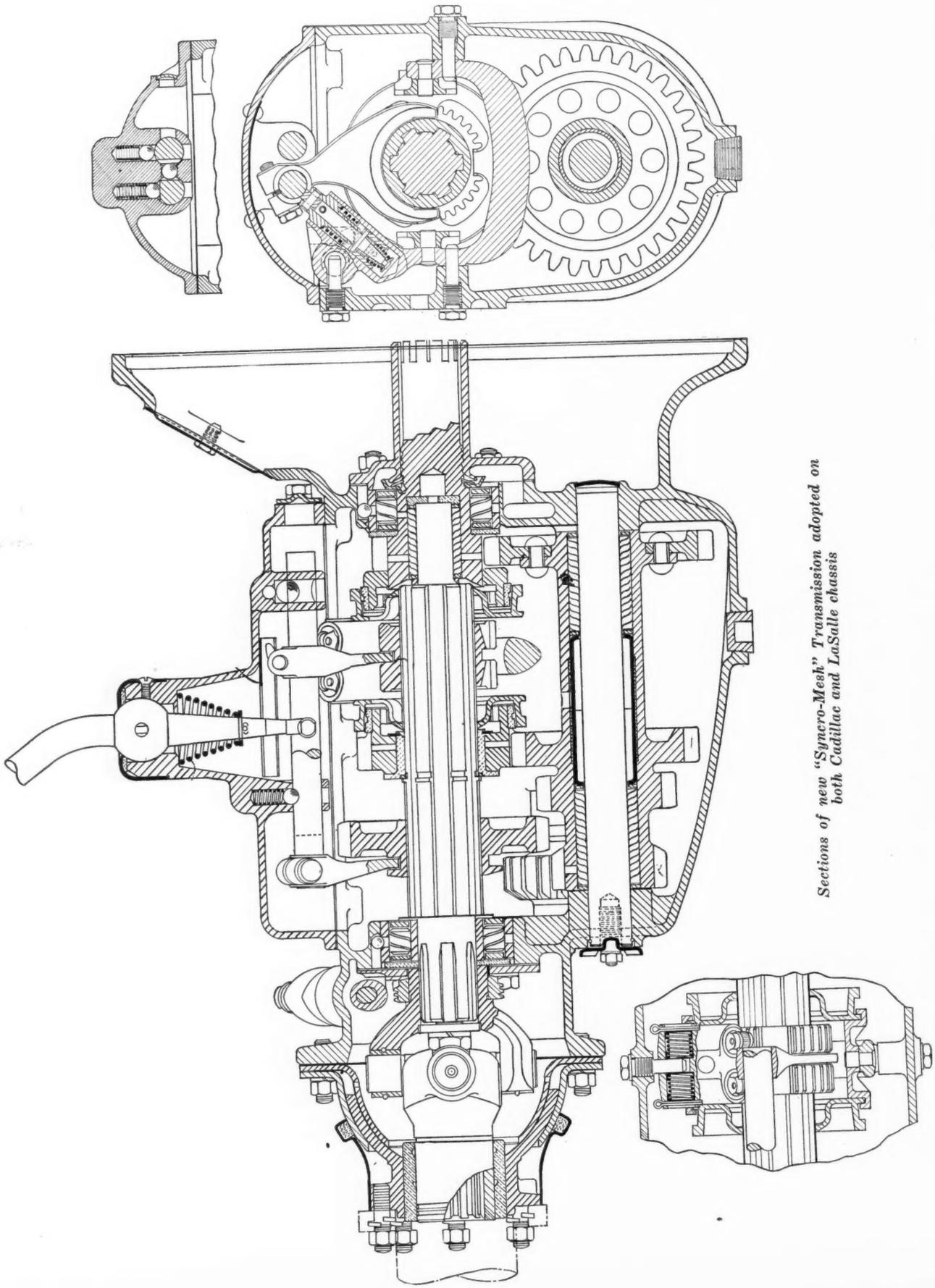
* Formerly on 125 in. wheelbase.

Cadillac-Fisher (140 in. wheelbase)

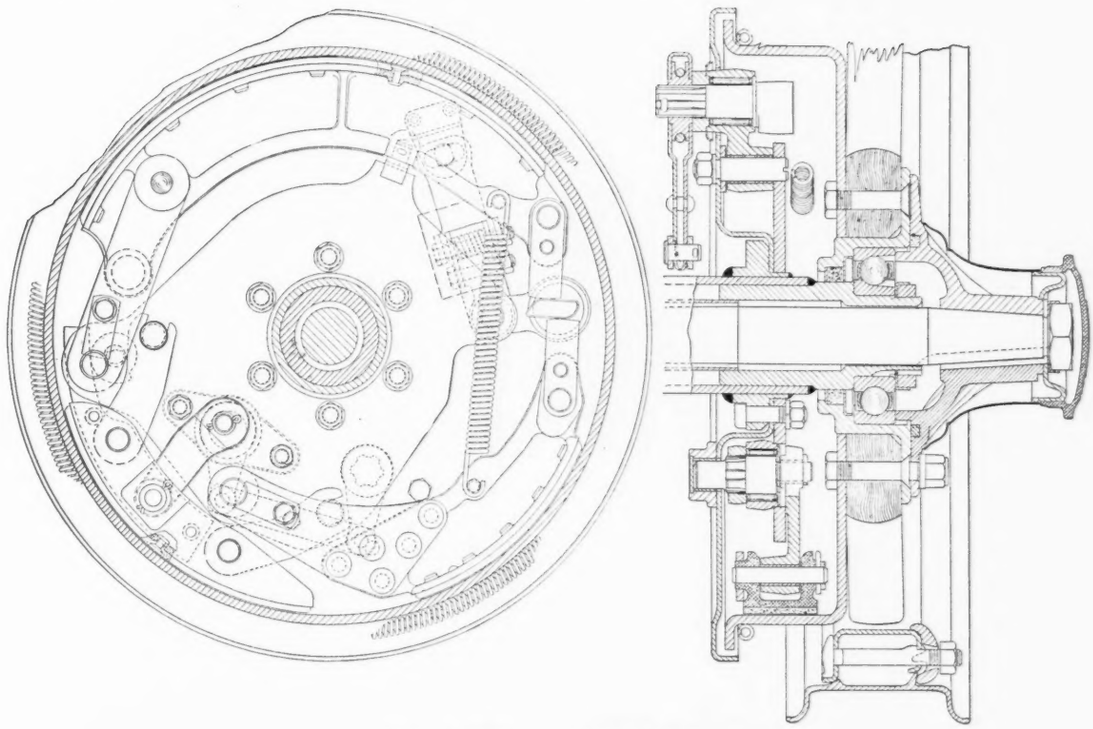
2-pass. Roadster	$3350	same
7-pass. Touring	3450	same
4-pass. Phaeton	3450	same
4-pass. Sport Phaeton	3950	same
2-4-pass. Coupe	3295	same
2-4-pass. Con. Coupe	3595	3495
5-pass. Coupe	3595	3495
5-pass. Sedan	3695	3595
5-pass. Town Sedan	3495	3395
7-pass. Sedan	3795	3695
7-pass. Imperial	3995	3895

Cadillac-Fleetwood (140 in. wheelbase)

	New Price	Old Price
5-pass. Sedan	$4195	$4095
5-pass. Imperial	4345	4245
5-pass. Sedan Cab.	4195	4095
7-pass. Sedan	4295	4195
5-pass. Imp. Cab.	4345	4245
5-pass. Club Cab.	4395	new
7-pass. Imperial	4545	4445
5-pass. Phaeton Sedan	5750	new
5-pass. Imp. Phae. Sedan	5995	new
Transf. Town Cab.	5250	5000
Transf. Town Cab.	5500	same
Transf. Lim. Bro'm	5500	same



Sections of new "Synchro-Mesh" Transmission adopted on both Cadillac and LaSalle chassis



New LaSalle rear-wheel brakes

The engagement of the clutches, of course, must precede engagement of the internal gear by a certain length of time. In order that the proper time interval may separate the two plans of shifting, two plunger-operated dash pots are mounted in the clutch operating yoke. The various stages of the shift are as follows:

1. With the initial movement of the control lever a cam on the shifter fork rocks the yoke by pressing against a roller on the dash pot plunger. By means of guide blocks pinned to the yoke this moves the drum into contact to synchronize the intermediate-speed gear with the main shaft.

2. While the clutch is taking effect in synchronizing the speeds, the plunger in the dash pot is traveling down, permitting the cam on the shifter fork to pass along over the roller. As soon as the cam has passed the roller, springs return the yoke to the neutral position, disengaging the clutch.

3. While the cam has been traveling over the plunger roller, the shifter fork has been bringing up the coupling gear, and the design is such that as the cam finishes its travel the coupling gear begins to engage. Further motion of the control lever completes the engagement.

The action in the opposite direction is identical, the coupling gear having teeth on both sides of the shift fork, and the other dash pot in the yoke, which is operated by the same cam, cocks the yoke in the opposite direction to engage the other clutch.

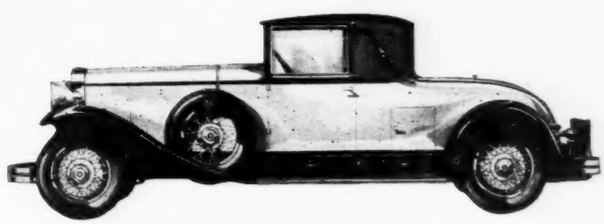
The plungers in the yoke are so constructed that weather conditions and changes in oil viscosity will not impede the operation. This is made possible by fastening the oil-tight sleeve-type piston to the plunger by means of a pin passing through a slotted hole in the plunger, permitting relative movement of the two parts. The lower part of the plunger forms an oil-tight seal against a flange inside the sleeve-type piston and also carries in its lower end a conical relief valve provided with a small vent hole. The cylinder is kept full of oil by means of a reservoir refilled by splash from the gears. With the oil hot the vent hole in the valve is sufficient to permit the oil to escape. With the oil cold the relief valve will lift off under sufficient pressure to allow the oil to escape under pressure. On the upward stroke the plunger moves up under spring action, unseating itself from the piston and permitting oil to enter below the piston, the pin on the plunger then pulling the piston up for the remainder of the stroke.

Mainshaft and pilot bearings are of the roller type. Bronze plates take the mainshaft thrust during the synchronizing clutch engagement. Universal joint housings are now cast integrally with the transmission case, to which they were formerly bolted.

The second important innovation in both cars is the completely internal braking system. In the rear drums there are three shoes, two for service and one for emergency, independently operated. The front wheel brakes have only the two service shoes. The two shoes of each service brake are of unequal length, the longer one having a self-energizing effect for forward motion.

Steel Cams Used

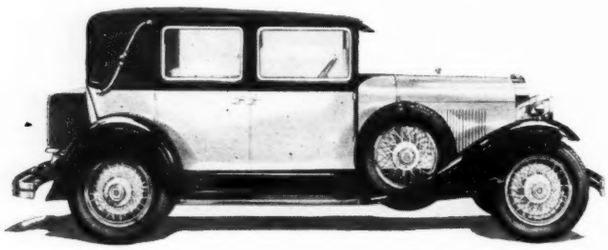
The shoes are anchored to supporting plates which are bolted to the knuckle in the case of the front brakes, and to a flange on the axle housing in the case of the rear brakes. The short shoe is anchored directly on the support, while the long shoe is connected to the anchor pin through a pair of links.



Another convertible model on the Cadillac chassis is offered in this two-passenger rumble seat coupe

The brake shoes are forced against the drums by steel cams, which possess three unusual features, as follows:

1. The cam does not work on the shoes themselves, but on links connected to the shoes. These links have rounded ends and give the effect of rolling contact, reducing friction at the cam.



This five-passenger convertible landau cabriolet represents a new addition to the LaSalle line. It as well as all other closed bodies are now on the 134-in. wheelbase chassis

2. The cams are self-centering to compensate for unequal wear of the lining. This is accomplished by carrying the cam and its bearing in a cam bracket which is pivoted in the dust-shield. An arm of this bracket floats on a spring which is originally adjusted to hold the cam in the central position. Then, if subsequent wear on the lining is not the same on both shoes, the spring permits the cam to recenter itself when the brakes are applied.

3. The lever which operates the cam permits changing the angle of the cam without changing the angle of the lever. This lever consists of a stamped steel casing in halves riveted together, containing a hub which is splined to fit the cam shaft; and a short piece of steel cable, one end of which is locked to and partially wound around the hub. The free end of the cable is threaded to receive an adjusting nut on the outside of the casing.

Screwing down the adjusting nut unwinds the cable from the hub, turning the hub and cam to a new position. One-sixth of a turn of the nut changes the clearance between the lining and the drum by less than 0.002 in. Owing to the fineness of the adjustment and the rigidity of the shoes, measurement of the drum clearance directly with feeler gages is said to be unnecessary

The emergency shoe, used in the rear wheel drums only, is of the straight pusher type actuated near its effective center by a push lever from an eccentric. The two ends of the shoes are floating, being guided by forked levers pinned to the shoe, the forks sliding on pins in the central bracket as shown in the illustration.

Roller Bearings Provided

Another feature of the braking system is the provision of roller bearings in place of bronze bushings on all brake cross-shafts, a total of sixteen such bearings which add to the efficiency of the brakes. Brake drums are 16½ in. in diameter on the Cadillac and 15 in. on the LaSalle. The force of brake application is divided in the proportion of 55-45 between the front and rear wheels. Another feature of the brakes is the provision of a coiled spring around the outside of the drum; it was originally intended merely to silence the brake, but was found to have a considerable cooling effect. Shoes are made of aluminum alloy to decrease the difference in expansion between drums and shoes.

Taking the chassis individual, the Cadillac engine remains unchanged as far as major dimensions are concerned, with a bore and stroke of 3 5/16 in. and 4 15/16 in. respectively. With a compression ratio of 5.3 to one, the high compression head offered optionally last year has been adopted as standard. Use of anti-knock fuels is recommended for most satisfactory operation.

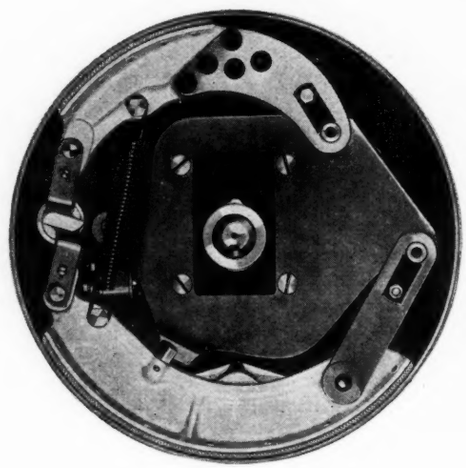
A major change is found in the oiling system. Piston pins, which were formerly splash-lubricated, now obtain oil through the rifle-drilled connecting rods. These pins are now made a tight press fit on the set screw side and push fit on the other to permit them to expand freely when heated. A slight change has been made in the rubber rear engine mounts.

The double-acting hydraulic shock absorbers, already referred to, are a two-piston type and a Delco-Remy product. At present they are manufactured exclusively for the Cadillac and not available for replacement on other models. These units have two vertical side by side cylinders with spring loaded pistons, actuated by a double-ended rocker arm which in turn is operated by a crank lever and connecting link from the axles. The fluid below the pistons escapes through the center of the piston head. A tapered metering pin projects into this orifice thus providing increased restriction with increased deflection. To change the shock absorber characteristics it is necessary only to change these pins. A spring-controlled safety valve is also built into each piston head. The pistons of both cylinders are identical, a difference between the depression and recoil action being due to differences in the metering pins.

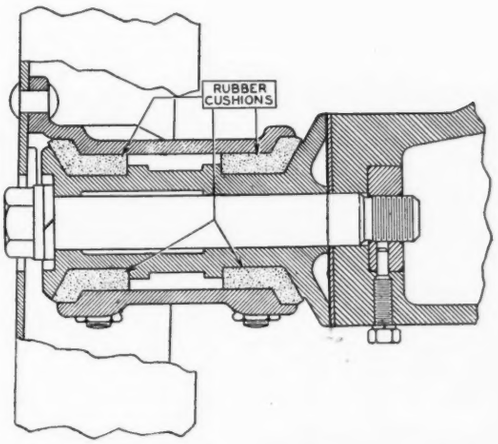
Frames in the Cadillac have been strengthened by increasing the channel depth to 8 in. and providing wider flanges on the side members 3¼ in. for the top and 2 9/16 in. for the lower. Ball and socket type shackles, formerly used only at the rear of the rear springs, are now used also at the front end of these springs (the car having a torque-tube drive). Longer and thinner shackle plates make the rear shackles of the front springs more flexible.

The front end of the muffler is now secured directly to the powerplant, while at the rear it is supported by means of the tail pipe. The new installation is said to facilitate the installation of car heaters in addition to making for more silent operation.

On the LaSalle chassis engine power has been increased to 86 hp. with an increase of ⅛ in. in bore to 3¼ in., giving the engine a piston displacement of 328 cu. in. High compression heads of 5.3 to one ratio are standard on this engine also, which also incorporates



The Cadillac left front brake is identical with the rear with the exception of the omission of the separately operated emergency shoe



Section of the softer rear engine mount used on both Cadillac and LaSalle chassis

the new rubber rear engine mounts, new method of fitting piston pins, and rifle-drilled connecting rods. adopted for the Cadillac. The fan has been increased in diameter. Control for all lights is now on the steering wheels. The rear axle housing is similar to that on the Cadillac.

Headroom More Spacious

The LaSalle now carries 6.50 in. tires on 19 in. wheels while Cadillac tires are unchanged in size. The decreased height from the ground has made possible an increase in headroom without increasing the overall height. LaSalle bodies are also wider.

The general lines of the bodies remain virtually unchanged. Shatterproof plate glass manufactured by the Pittsburgh Plate Glass Co., has been adopted for all models throughout except for opaqued glass sun-visors of closed cars.

Front seats are completely adjustable by means of the Fisher Body mechanism first shown on the 1929 Buick models. Full cross seats, are not attached to body pillars but move as a unit, the range of adjustment being 2 in. forward and 1½ in. back.

Both lines of bodies have been considerably strengthened by better bracing sills and the use of heavier dash reinforcements. Considerable attention has been paid to the elimination of noises and the term "pneumatic engineering" has been applied to efforts along this line which have been directed chiefly to the reduction of drumming and vibratory effects. All body panels are put under tension with wadding between them and the body pillars. A wood panel is fastened to the back of the dash for heat and noise insulation, and the back of part of the dash is ribbed to prevent drumming. Roof bracing also has been worked out to eliminate drumming. Floor boards are wrapped in fabric to reduce the transmission of vibration.

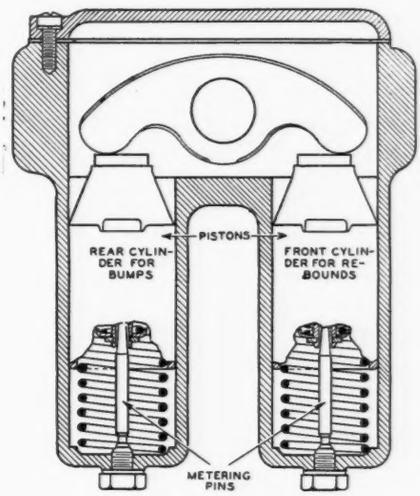
Body Details Changed

Several body models will be available in colored lacquered fenders, splash shields, etc., and the former policy of giving a wide range of color options is continued. Chrome plating is more widely used than formerly. Parking lamps are now mounted on the front fenders, but the chrome-plated cowl band is retained.

On the LaSalle bodies there is an oval shaped molding on the rear panel, while at the front end the coupe pillar effect is accentuated. The bodies are 1 in. wider at the front seat and 2½ in. at the rear seat. Windshields are also 1 in. wider giving better range of vision. The roof is 7 in. higher above the floor boards.

The radiator cap has been lowered somewhat, and the windshield pillars have been set back slightly for better vision. Closed models are trimmed in plain mohair, with broadcloth optional. A panel of broadlace replaces the inlaid walnut moldings used on the door interiors. A new type of instrument board, similar to that used on the Cadillacs has been adopted, having a stamped molding, however. It is finished in black, as standard. Instruments are arranged in group effect. A tandem double bladed Delco-Remy electric wildshield wiper has been adopted. Step lights have been eliminated. A rubber weather strip is added to the cowl ventilators.

Door handles are fitted with pinned-in theft-proof locks. The transmission lock, which operates from the dash, has been made more effective by designing it so that when the cable is cut, the transmission will lock



Section view of the new Delco-Remy double acting hydraulic shock absorber

automatically. The coincidentally operated ignition lock does not ground the circuit, but breaks the connection to the distributor.

These locks are also found on the Cadillac, as are mohair upholstery on closed models, broadlace panels on doors instead of walnut moldings, tandem windshield wipers, and cowl ventilator improvements.

THE following information on the General Motors Corp. plant at Port Elizabeth, South Africa, which was first opened nearly three years ago and has since been greatly extended, is given by a South African correspondent in *The Engineer* of London:

The total amount of capital now placed in plant equipment and material at the factory is close to £600,000. The plant gives employment to 650 Europeans. The monthly pay rate has reached the figure of £14,000, of a yearly expenditure in wages of £168,000. A sum of £30,000 monthly is expended in the purchase of South African materials, or a yearly expenditure of £360,000 for this purpose alone. This latter figure, plus the £168,000 already noted, brings the annual expenditure up to £528,000 per annum.

ACCORDING to a report of the local British trade commissioner, on March 30, 1928, there were in use in Ceylon 9968 private motor cars, 1377 motor cabs, 2157 buses, 1995 motor trucks and delivery wagons, 20 tractors and 73 trailers.

Real Test *of* Automotive *Man* General Motors

J. D. Mooney

"THE men who are running the automobile industry today will have to study business economies and merchandising theories in a fundamental—even an academic—way if they are going to continue to be factors in the developments of tomorrow. The automobile industry has a lot to learn from other lines of trade, particularly as regards merchandising and marketing methods and practices. Maybe plain mental laziness is the real reason, more often than we like to admit, for our insistence that our problems are different and that we can't learn anything from others."

This critique of automotive management didn't come from a college professor, from a merchandising counselor or from the dean of a school of business. It came in calm, measured tones from a man whose entire background has been definitely practical rather than theoretical in character. It came as one of a number of graphic comments about management problems in an interview with James David Mooney, president, General Motors Export Co., and vice-president in charge of export division, General Motors Corp.

Broad Interests

Mr. Mooney's thoughts about management needs have particular significance because in his organization, with 22 subsidiary companies covering every part of the world, all of the ordinary domestic problems of management are present but are intensified three and four-fold. The necessity of getting a plan or program understood throughout the executive organization before it can be in efficient operation; the need for proper adjustment of given men to given jobs; the obligation to prejudge market trends and business potentialities—all of these management problems, difficult enough in the more centralized domestic organizations, arise in vivid and animated form in an export company such as that which Mr. Mooney heads.

agement Yet *to* Come, Says Export *President*

Problem of future will be to sell, not merely to produce, in opinion of J. D. Mooney. Thinks success of industry in past has been won too easily. Believes much to be learned from other fields.

By Norman G. Shidle

And his ability to administer such an organization successfully is best visualized not merely by the constant increase in yearly sales volume since his taking charge, but rather by the rising tide of net profits during the same period. Here is a combination of advances eagerly sought for but infrequently attained by domestic companies in the last decade.

"I sometimes think," Mr. Mooney said, "that we automotive men have had it too easy. We tend to get soft like a heavyweight champion who fights only once every year or two. When a battle does come along, then, we are a bit too prone to blame our troubles on some outside factors, rather than on the lack of continuous and grueling mental effort which, down in our hearts, we know is esesntial if we are to continue our forward march. A flabby mind is going to mean business retrogression in this automotive field from now on just as surely as flabby muscles mean a start on the down grade for a pugilist.

"Trouble is it hasn't always been that way in our industry. The raspberries have always grown very, very plentifully in the automotive patch. Some of us who are automotive executives don't know what work is compared to executives in other and older industries. We have been able to pick several bushels of raspberries in the automotive patch with about the same amount of effort needed to fill a quart pail in some other fields. We keep rolling up statistics and profit figures, often without knowing how we got them or why they accrued. We look at the balance sheet and wonder what it's all about.

In Transition Stage

"Those days are about past. The keen, aggressive, fit, well-trained mind is the only one that's going to be able to survive the next 20 years in this business.

"We are in something like a transition stage. Up until recently the executive positions of the industry were for the most part in the hands of the older men who built the business. Those men built a huge industry to a glorious success; their names and deeds will always illuminate the pages of automotive history. But they built under economic and market conditions quite different from those under which the industry must operate from now on. Gradually the picture is changing. At the end of another decade the second generation of automotive executives will be almost wholly in company control.

"And while striving to carry on successfully the fine tradition left to them by the pioneers who laid the foundations of our business during the first quarter of the twentieth century, it seems to me that, generally speaking, there is one fundamental difference in outlook, in approach to the management problem between those who have been successful in the past and those who are going to be successful in the future.

"The older type of executive has tended to approach his management problem primarily from the inside looking out. He has, subconsciously perhaps in many cases, seen production as the basis of his scheme of things, with merchandising as a means of disposing of the products of his manufacturing plant. His has been the subjective attitude in management, if you will.

Objective Attitude Needed

"The successful automotive executive of the future, however, would seem to be under the necessity of taking an opposite viewpoint. He will have to regard markets, demand for products and possibilities for developing greater use of his products as the basis for his calculations. He will come to regard production almost wholly as a means of supplying a demand, existing or stimuated. His will be the objective attitude in management.

"In the application of that attitude to the practical problems of our business, scores of readjustments will have to be made, first in mental viewpoint of hundreds of men up and down the executive lines, then in the handling of a multitude of small daily situations as well as in decisions in regard to major operating and organization questions.

"It is in regard to merchandising theory and practice that we in the automotive business have a great deal to learn from the older industries. The drygoods business, the typewriter business, the cash register business and scores of other of the older industries have, through experience, evolved merchandising methods and principles which are fundamental in character. We are wasting time and money when we don't study those principles in a fundamental way and analyze their possible application to our specific automotive problems.

"The obvious objection that 'our business is different' seems to me to be a reflection of mental laziness in far more cases than it is a studied conclusion developed from hard study.

"In personnel as well as in merchandising matters, the objective approach in management seems destined to replace the subjective. Serious effort on the part of management to understand the motives, desires and potentialities of employees will be used as the basis for handling men far more in the future than in the past. More and more it will be realized that the urge to create is fundamental in most men who achieve permanent business success under present conditions. Insofar as the executive maintains an objective point of view, insofar as he does achieve and is dominated and actuated by his creative instincts, he will find it possible to have his desires satisfied and to go forward successfully in the economic future which lies ahead. He can no longer afford the subjective view of his relations to his industry and his employees; he cannot properly visualize his company, his industry as merely an environment to be molded to gratification of his own personal pleasures, the fulfillment of his personal whims or the inflation of his own ego.

"It seems to me worth emphasizing, moreover, that it is no mere coincidence that commerce has reached its peak of achievement in the United States just at a time when the average American finds himself blessed with unparalleled opportunities and means of mental and spiritual stimulation. The one has made the other possible—of that there is not the faintest shadow of a doubt. No less can there be any doubt that the gradual change from the subjective to the objective in management will be among the most important factors in amplifying those blessings in the future."

Had Varied Experience

The full significance of Mr. Mooney's remarks become apparent only when they are fitted into the broad background of varied experience from which they spring. Almost always after talking with Mr. Mooney, interviewers have remarked on the quiet voice, the restrained tone and the calm words in which vivid, poignant ideas are injected into the conversation.

This strange combination of unusual calm coupled with forceful thinking and dynamic action seem to be characteristic of the man. In some ways, his is a career of opposites.

At 44 the president of a corporation which this year will do a $250,000,000 business, the third largest unit in the powerful General Motors Corp., Mr. Mooney still claims to be "wondering what it's all about." Beginning with a technical training at Case School of Applied Science and finishing up at New York University, his operations indicate a profound knowledge of the psychological intangibles of business along with a practical understanding of engineering details. His official biographical sketches say that he started out as a mining engineer in Mexico and California. Informal biographers tell of years in mining and lumber camps of the West, working and fighting in the mood and spirit of his surroundings—and of membership in Delta Mu Delta, an honorary scholarship fraternity at N. Y. U.

Then came a period as associate editor of *American Machinist* when that publication was a part of the old Hill Publishing Co. and later, years of industrial experience with Westinghouse Electric & Manufacturing Co., B. F. Goodrich and Hyatt Roller Bearing Co. before the latter organization became a General Motors subsidiary. Next his part in the world war—overseas with the 84th Division as a captain in the 309th Ammunition Train, 159th Field Artillery Brigade.

Finally, there is the General Motors period of his work, starting when he became president and general manager of the then sick Remy Electric Co. in 1920. His former associates tell thrilling stories of the business drama which was acted out during those two years with J. D. Mooney as the star and a number of General Motors executives in the role of dramatic critics. The show turned out to be a hit. Then the next engagement as general manager of General Motors Export Co., starting in 1921, and afterward his accession to his present position in 1923.

Now he is an active business executive, but still maintains broad interests; in Century magazine for August he contributes an article, "Atlas Wakes Up." He continues to manifest the many-sided presonality which has brought him to the present stage in his business career. But around all of these many sides, one is constrained to speculate, perhaps there runs a single thread of inspiration, expressed, possibly, in the opening sentence of that Century article—"The urge to create, to perpetuate himself in his works, is the trait above all others which distinguishes man from the lower animals."

PLANS are being worked out in Canada, through the joint efforts of the Department of Trade and Commerce and of the National Council for Industrial Research, which are intended to place Canada on a par with other industrial countries with regard to industrial research work. The facilities available in this country seem to have been accepted as guides, and the proposed plan is to combine the good features of the schemes under which the Bureau of Standards at Washington and the Mellon Institute at Pittsburgh work. It is proposed to give public assistance to persons possessing original ideas or processes for the betterment of industry, and for the development of which they have no means themselves. The public is to be insured the benefits of the experimental work and at the same time the interests of the originator are to be protected.

At the next session of the Canadian Parliament legislation will be introduced by the Government providing for an appropriation for industrial research equal, on a per capita basis, to the expenditures of leading industrial nations for this purpose. It is planned to establish research laboratories under the direction of the National Research Council in Ottawa. These laboratories will carry on work connected with standardization efforts of all kinds and will afford facilities for private firms wishing to carry on research work under the administration of the permanent staff of the Research Council.

BERLIN on July 1, 1928, had a total of 76,409 motor vehicles of all kinds, the number having increased by approximately 3000 during each of the two preceding months. Of these 36,081 were passenger vehicles (including cabs and omnibuses), while 12,956 were motor trucks and 18,991 motorcycles. The number of motor cabs decreased from 9151 to 9128, while the number of buses increased from 654 to 720. Of the passenger cars registered in Berlin in recent months more than half were of foreign origin, while less than one-quarter of the number of trucks and about one-fifth of the motorcycles were of foreign manufacture.

THE use of tractors on the sugar plantations in Mauritius is rapidly increasing. At the end of 1926 there were 117 machines in service, the tracklayer type predominating. Nearly all machines are of American make.

Just Among Ourselves

Changing Motorists' Mental Reaction at Grade Crossings

READ about an eminent psychologist the other day who urges that the psychology of the grade crossing evil calls for instruction of all drivers in the rule that "You must change gears before crossing a railroad track." He reasons, according to Marlin Pew in *Editor & Publisher*, something like this: Grade crossing accidents often are due to mental abstraction. No matter how deep that abstraction, if approach to a track calls to the subconscious mind of the motorist an emotion of peril, he probably will not be caught unawares and killed. To create such a mental habit in him it is necessary to provide a mechanical motion. He must know, for instance, that to cross a railroad track it is necessary for him to make some motion or to do something to the mechanism of his car and that this is as necessary as to use the brake to stop or the steering wheel to turn. When this idea has penetrated the subconscious mind the action becomes automatic. "Railroad crossing—do something!" Exactly as "Car coming, keep to the right!" Then, as stated, the mechanical action suggested for inculcation is that of changing gears.

* * *

Why Not Stop the Trains as Well as Cars Sometimes

WE don't propose to pose as a psychologist, but we can't claim to be very much excited about the practicability of this scheme. Our thinking on the point, of course, is inhibited by a fundamental belief that every grade crossing should be eliminated or protected by mechanical means or that, in some cases at least, the onus for stopping, looking and listening should be on the railroad train operator as well as on the motorist. On lines where there are very few trains per day and where there is a great lot of motor traffic on roads which cross the rail line at grade, it would seem to be more economic from a basic standpoint to stop the trains ten times a day instead of the passenger cars some thousands of times a day. When train traffic is really thick, the grade crossings should be eliminated. On lines in between the two extremes of rail traffic, manual or automatic protection is desirable.

* * *

Elimination of Grade Crossings Final Answer

OUR limited knowledge of psychology would lead us to believe that it would be impossible to get the mass of motorists in the habit of changing gears at all grade crossings because so many such crossings exist in open spaces where the track is plainly visible in both directions and where a very few trains per day operate. If all grade crossings presented active danger to the motorist most of the time, the situation might be different. Traveling by car about four hundred miles during the last week, for example, we can remember going over at least seven grade crossings where it would have seemed to us almost silly to come to a full stop and change gears; if the idea had occured to us, we undoubtedly would have felt far safer to keep going in high gear at 35 m.p.h. when no train was in sight for several hundred yards on either side than we would to have stopped, changed gears and taken a chance of stalling on the track and waiting for a train to come along. Physical elimination of grade crossings, of course, is the only final answer.

Paris Show Hegira Getting Under Way Now

EVERY year the Paris and London shows are getting more attention from American executives. Already the sailing lists have begun to contain the names of a number of important American automotive personages who are leaving for abroad to look over their foreign interests and incidentally to take in these two major foreign exhibits. The Paris show particularly has come to be a meeting ground for European automotive men of all kinds and provides the same kind of opportunity for manufacturers and distributors to get together that once was possible in this country chiefly through the New York and Chicago exhibitions. The indications are that this year there will be on show an unusually large number of new designs.

* * *

Foreign Automotive Leaders to be Numerous at N. Y. Show

THE opening of the New York show to foreign exhibitors for the first time this year, moreover, is expected to bring to our exhibition more representatives of foreign manufacturers than in the past. While fairly important delegations from overseas have visited our shows on several occasions, particularly when the World Motor Transport Congress was held here, it is quite likely that the industrial — as distinguished from the trade—visitors will be more numerous and more important this year than ever before. Certainly this growing interchange of visits and ideas is definitely to the best interests of all concerned in building to even greater success the world's largest manufacturing industry.—N.G.S.

Improvements Made in *Steering* Gears *and* Controls by Gemmer

Changes are designed to meet demand for easier steering and for better appearance without sacrifice of production economy. Control mechanisms of friction-lock type.

By P. M. Heldt

THERE have been two major incentives toward changes in steering gear design in recent years. The introduction of balloon tires tended to make cars harder to steer, which was the more objectionable because with the growing congestion of our streets one had to do a great deal of manoeuvering in parking. As in addition more and more cars are being driven by women, this had to be remedied by appropriate measures in design.

The other incentive has been the strong demand for improved appearance. Everything on the outside of the car and inside the body must be attractive to the eye, and as the steering wheel with its controls is about the most conspicuous object in the driver's compartment, it has been the subject of refinements from the artistic point of view.

In the lower-priced cars the controls formerly were often placed under the steering wheel, which permitted economy in manufacture. This arrangement, however, was never very popular with the driving public, and during recent years great efforts have been made in the designing departments of companies manufacturing steering gears to evolve new designs of control concentric with the steering column that are less costly to manufacture and at the same time give every assurance of reliability and durability.

The demand for easier steering has been met by the use of higher reduction ratios in the steering gear and the more liberal use of anti-friction bearings. Fig. 1 herewith shows a steering gear design of the Gemmer Mfg. Co., Detroit. It is of the worm and sector type, but both the worm and sector are rather different from the corresponding parts used in steering gears a decade and more ago. It will be noticed from the drawing that the worm is of the hour-glass type, while the worm wheel sector has only two teeth. This type of steering mechanism is not new, but what is new in the design is the use of roller bearings at both ends of the worm. These bearings take both the axial and the radial load of the worm, and greatly reduce the friction.

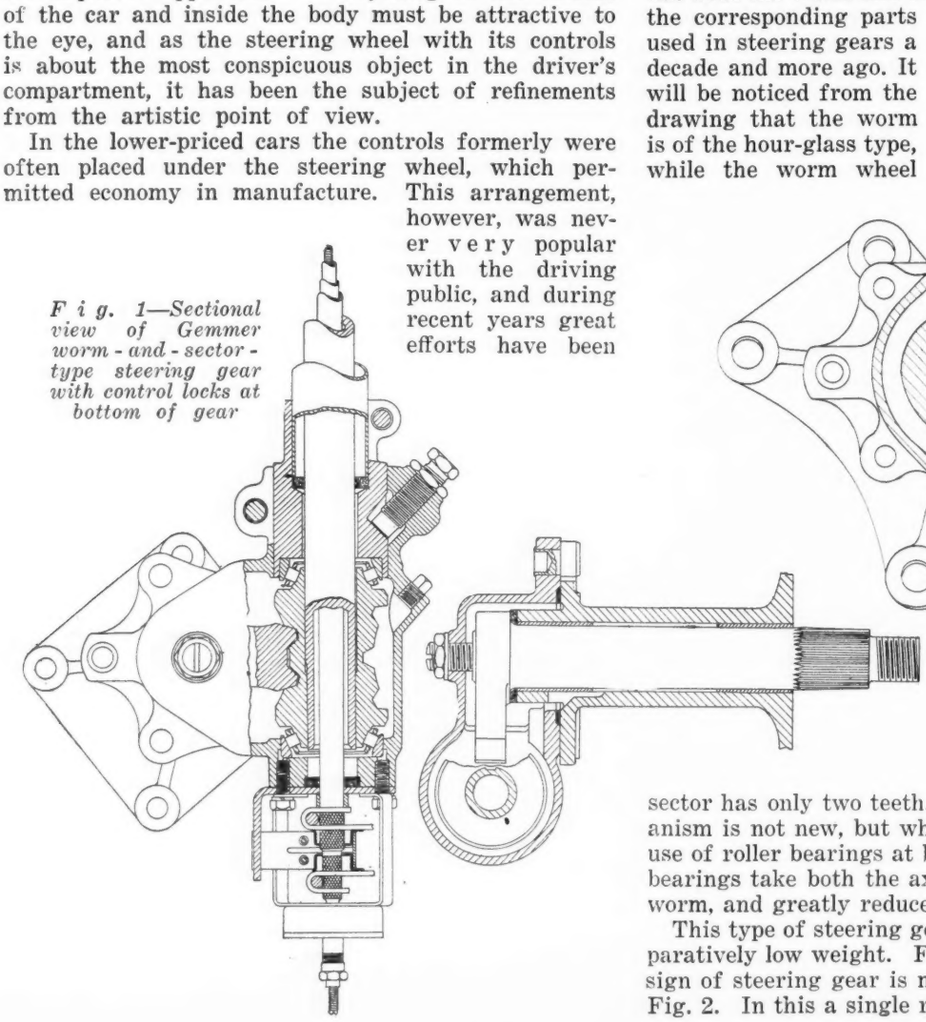


Fig. 1—Sectional view of Gemmer worm-and-sector-type steering gear with control locks at bottom of gear

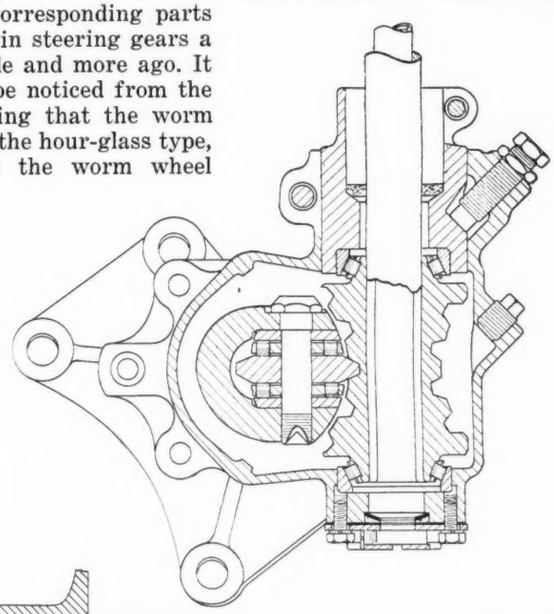


Fig. 2—(Above) Sectional view of Gemmer steering gear with roller tooth on steering shaft lever

This type of steering gear is suitable for cars of comparatively low weight. For heavier cars a different design of steering gear is manufactured, as illustrated in Fig. 2. In this a single roller tooth, supported between

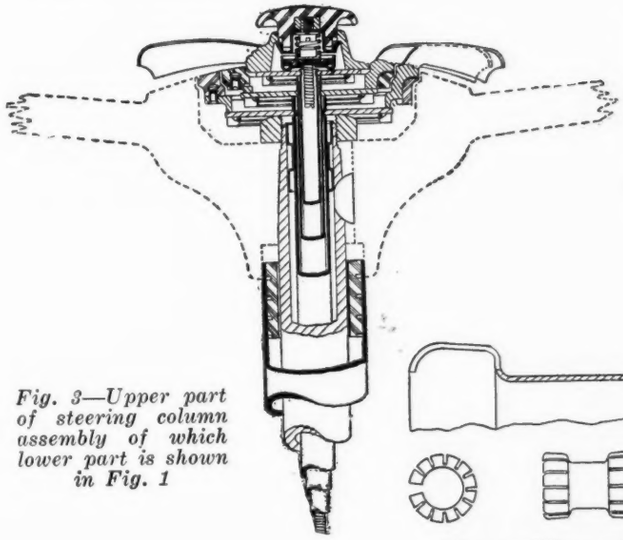


Fig. 3—Upper part of steering column assembly of which lower part is shown in Fig. 1

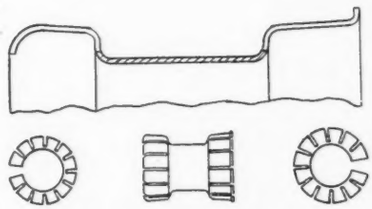


Fig. 4—Silencer bushing for steering gear stamped from spring phosphor bronze

roller thrust bearings on a lever on the steering gear shaft, meshes with the hour-glass type of worm. This construction greatly reduces the friction, as sliding motion is almost eliminated, and makes for very easy steering.

Steering gear ratios vary with the cars for which the gears are designed, but on the whole the ratios have been greatly increased. While ten years ago the reduction ratios of steering gears for passenger cars were generally less than 10 to 1, at present it is customary to use a ratio of 13 to 1 for the smallest, 16 to 1 for medium weight, and 18 to 1 for the heaviest cars. Whereas in the old cars the front wheels could be moved from hard over one way to hard over the other way by about one-and-three-quarter turns of the steering hand wheel, it now takes about three complete turns.

This greater reduction ratio naturally makes the steering gear more nearly self locking or irreversible, but the use of anti-friction bearings in both the knuckles and the steering gear and of steering mechanisms which are inherently more nearly free from friction, counteracts this effect, and while at the Gemmer factory the writer drove a car in which the front wheels when deflected from the straight-ahead course immediately righted themselves automatically when the steering wheel was released, owing to the castering effect of the steering knuckles. This car was fitted with a steering gear having the roller type of tooth. This self-righting characteristic is said to reduce the fatigue of driving materially.

Practically all control mechanisms are now of the friction-lock type and the Gemmer Mfg. Co. employs two different locking devices, one located at the top and the other at the bottom of the steering column. The latter is illustrated in Fig. 1. The control tubes at their lower ends carry levers stamped from sheet steel. These levers are bent in the form of a U, and both arms of the U pass over a knurled section of the control tube and are clamped thereto by a clamp screw. The two levers have drums on them which form friction surfaces contacting with a band of friction material supported on a bracket between them, which is secured to the wall of a housing at the bottom of the steering gear housing proper. Directly below this housing is the headlight dimming switch, which is operated by the inner one of the three control tubes, through which passes the cable for the horn button.

The upper part of the steering column of which the lower part is shown in Fig. 1, is represented by Fig. 3. It will be seen that the steering tube is supported inside the jacket by means of a non-metallic bushing. The steering wheel is secured to the steering tube by means of a Woodruff key. Between the steering tube and the outermost of the control tubes is placed an anti-rattler bushing of peculiar design, of which several detail views are shown in Fig. 4. It is a stamping of spring phosphor bronze and is of spool form. At one end there is an outward flange which locates the bushing in position. The bushing is split longitudinally and in addition the enlarged outer ends are slitted longitudinally, so it is compressible radially. To add further to the ability of the bushing to take up variations in the radial dimension, the enlarged ends are slightly tapered.

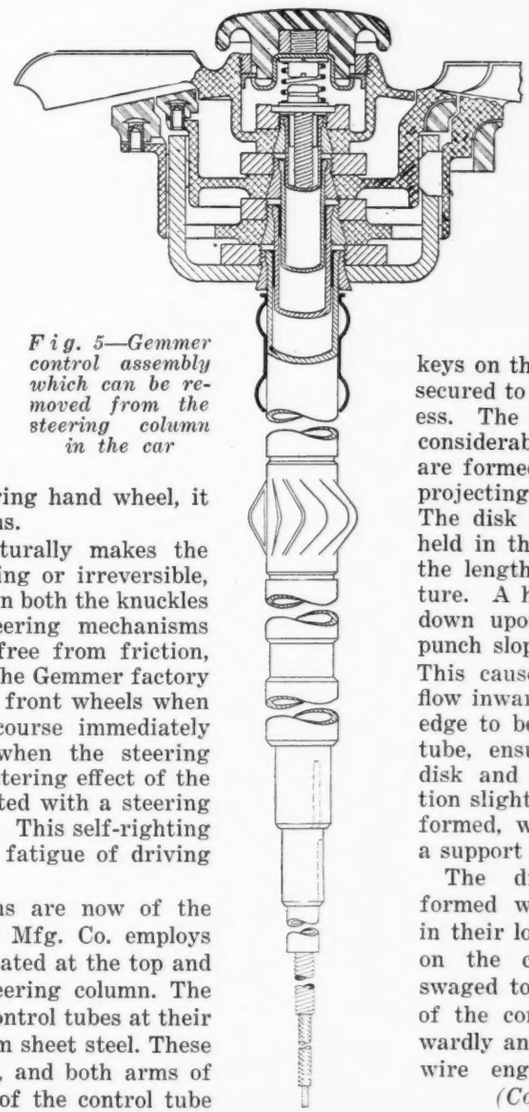


Fig. 5—Gemmer control assembly which can be removed from the steering column in the car

The control assembly at the top consists of steel disks with teeth or keys on their circumference, which are secured to the tubes by a swaging process. The disks are made of steel of a considerable degree of hardness and are formed with six opposite inwardly projecting teeth on their inner edge. The disk is passed over the tube and held in the proper position relative to the length thereof by means of a fixture. A hollow punch is then brought down upon the disk, the face of the punch sloping inward toward the axis. This causes the metal of the disk to flow inward and the teeth on the inner edge to be forced into the wall of the tube, ensuring a firm joint between disk and tube. By the same operation slight indentations of the tube are formed, which serve to give the tube a support on the one within it.

The die-cast control levers are formed with rings which have slots in their lower edge into which fit keys on the circumference of the disks swaged to the tubes. The lower edge of the control lever ring projects inwardly and a snap ring of steel spring wire engages between this inward

(Continued on page 267)

Lightness and Strength Combined in New Aluminum Alloy

"Hyb-lum" marketed as non-tarnishing and non-corrodible and is stable after heat treatment even at elevated temperatures. Supplied in four grades.

THE Sheet Aluminum Corp. of Jackson, Mich., has placed on the market a new aluminum alloy which is claimed to combine lightness and strength to an unusual degree. The new alloy is known as Hyb-lum and is covered by U. S. patent No. 1,579,481. Research and experimental work on it was done by Victor N. Hybinette, Jr., with the advice and assistance of his father, who is an officer of the Sheet Aluminum Corp. and is well known in the metallurgical industries.

In the past the principal alloying elements for aluminum have been copper, manganese, silicon and magnesium. The alloying elements of Hyb-lum are nickel and the elements of the chromium group, the total additions of heavy metals amounting to about two per cent. Among the claims made for Hyb-lum are that it has a pleasing color, is non-tarnishing and non-corrodible, resists chemical action and intercrystalline corrosion, is weldable, has a low specific gravity, strength and plasticity, resists fatigue, is not sensitive to moderate temperature variations in heat treatment, and is stable after heat treatment even at elevated temperatures.

The color of Hyb-lum is described as pure white and similar to that of silver, and the alloy can be given a brilliant and lasting polish. It can be welded with gas the same as pure aluminum, while for arc-welding it is said to be superior to pure aluminum and to other high-strength alloys.

While Hyb-lum is a definite alloy, it comes in four different grades—A, B, C, and D—having different physical properties. The different properties are obtained by annealing, hard-rolling to different tempers, cold-working and heat treating. Since the chemical compositinon of all of the grades is alike, it follows that such properties as the specific gravity and the electric and heat conductivities are alike for all grades. The specific gravity is 2.73, and the electric conductivity is 45 to 50 per cent that of copper.

Hyb-lum is produced as a heat-treated metal (grade D) that may be used as such, obviating the necessity for users to maintain special heat-treating departments. In cases where finished or semi-finished articles must be heat-treated by a fabricator, the process has been simplified to a large extent (grade C). Heat-treatment of Hyb-lum consists in quenching in cold water from 900 to 975 deg. Fahr. for a period of from 12 to 24 hours. The alloy is annealed at from 600 to 1000 deg. Fahr. Thus it is apparent that the temperature ranges in all cases are very wide.

The alloy may be aged at temperatures of between 300 and 450 deg. Fahr., and after such aging is completed, in from 12 to 24 hours, the material is said to remain unchanged at all temperatures up to the annealing point. The D grade, in its soft and medium states, has a comparatively low elongation, but its reduction of area is 40-70 per cent. In this alloy, it is pointed out, the percentage of elongation is not a measure of plasticity, for with only two per cent elongation the alloy still bends well.

As the amount of cold-working increases the strength, thin gage sheet and a highly fabricated article will show a higher yield point and greater tensile strength, and a correspondingly lower elongation, than will a heavy sheet or an article that requires little working in its manufacture. It follows, therefore, the tabulations of the physical properties should be interpreted in terms of thickness, method of manufacture, annealing or cold-working, and the duration of heat-treament and aging.

Hyb-lum A is a general purpose alloy, suitable for drawing and forming operations. It cannot be heat-treated, but it is supplied in different tempers, the same as aluminum or brass, the various tempers being produced by cold-rolling so many numbers after annealing.

Physical Properties of Hyb-lum A

Temper	Yield Point	Ultimate Strength	% Elongation	Ericksen	Scl.	Brinell
Soft	14,000-16,000	24,000-28,000	10-15	8-10	9-11	45
Hard	35,000-40,000	40,000-45,000	2	0	35	70

Hyb-lum B, an alloy of lower tensile properties, is suitable for deep drawing where strength is not of primary importance. It cannot be heat-treated.

Physical Properties of Hyb-lum B

Temper	Yield Point	Ultimate Strength	% Elongation	Ericksen	Scl.	Brinell
Soft	12,000-14,000	20,000-24,000	18	9-11	9-11	40
Hard	30,000-35,000	32,000-36,000	2	0	30	65

An interesting variation of grade B is obtained by the addition of magnesium (Hyb-lum B C). This alloy has an unusually high percentage of elongation and may be heat-treated. It is intended for use where a heat-treated alloy with good drawing properties is required. It is also prepared for this special purpose in the heat-treated and aged condition (Hyb-lum B D). The latter has a yield point of approximately 30,000 lb. and an ultimate tensile strength of 40,000 lb., with an elongation of about 10 per cent. Fabrication will increase its strength further.

Hyb-lum C is partly heat-treated, and is supplied quenched but not aged. In the quenched state it has the physical properties of Hyb-lum A soft. It is recommended for all structural work and for drawing that is not too deep. It will bend 180 deg. flat.

Hyb-lum C, quenched, is prepared with the exception that the user will age the fabricated product. It does not warp in aging, and no deterioration results from interrupted or prolonged heating. If heated above 500 deg. Fahr. it gradually anneals and thereby loses its strength.

After forming and applying the indicated heat-treatment or aging, Hyb-lum C has the following physical properties: Yield point, 35,000 to 45,000; ultimate strength, 45,000 to 50,000; elongation, 5 to 8 per cent.

Hyb-lum D is completely aged, and its strength is in inverse proportion to its ductility. It is supplied in three tempers—soft, medium and hard.

Physical Properties of Hyb-lum D

Temper	Yield Point	Ultimate Strength	Elongation
Soft	35,000	40,000	8-10
Medium	45,000-50,000	50,000-55,000	3
Hard	55,000-65,000	55,000-65,000	0

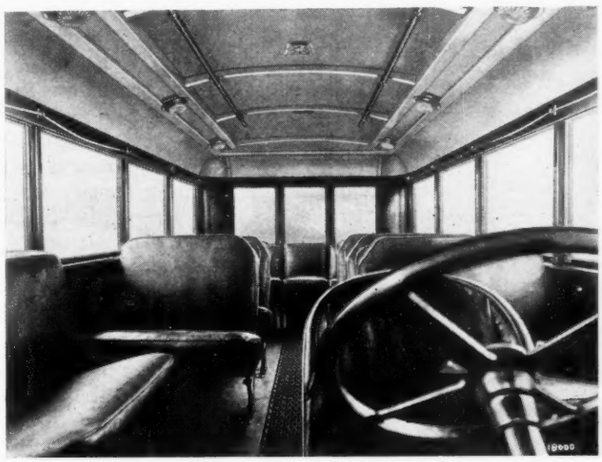
This grade bends 180 deg. flat when soft, and in thin sections also when medium hard, but it cannot be formed when hard. It is suitable for formed structural members and other purposes where strength is desired but operations other than bending are not required. Its advantage over Hyb-lum C lies only in the fact that it does not require heat-treatment by the user.

Hyb-lum products comprise flat, coiled and strip sheets, sheet circles, extruded structural and special shapes, moldings, bars and rods, wire and rivets, stampings, screw machine products and forgings. All of these are furnished heat-treated if desired. In addition, ingots for die castings, permanent mold and sand castings are supplied.

New Graham Motor Coaches Announced

NEW editions of its motor coaches are announced by the Graham Brothers division of the Chrysler Corp. Manufactured as formerly in three models, a street car type seating 21, a parlor coach seating 16 and a club coach seating 12, they embody a number of improvements in performance, comfort and operating safety.

As with the last series they are fitted with a six-cylinder engine developed from that used in the Dodge Senior Six. In addition they are now fitted with the four-speed transmission used in the 2½-ton Graham Brothers truck, which gives them added flexibility.



Interior of Graham 21-passenger coach

Internal expanding Lockheed hydraulic brakes with 16-in. drums have been adopted for greater safety, supplemented by a hand brake operating on an eight in. drum on the propeller shaft. Inside dimensions of the bodies have been increased somewhat, but rather than use this for additional seating capacity, it has been used for giving the passengers more room, including the adoption of longitudinal instead of cross seats over the wheel housing in the street car type.

Manually controlled shutters are fitted to the radiator, in addition to the circulation controlling thermostat located in the cylinder head. Among other engine accessories are an oil filter and gasoline strainer. A single plate 11 in. clutch is used, and the four-speed transmission with all shafts on anti-friction bearings, is in unit with the engine.

Some of the features of the new bodies include more attractive appointments, a new non-skid mat over the hardwood flooring of the street car type, leather upholstery, adjustable driver's seat, and recessed seats for increased knee-room. Dash equipment includes a fuel gage and engine thermometer in addition to the usual instruments. Windshields are of one-piece type, swinging on the street car coach, and fixed on the others, ventilation on these being obtained from V-shaped glass ventilating wings hinged at their rear edges.

Gemmer Steering Gears

(Continued from page 265)

flange and the steel disk, which holds the two parts together firmly and prevents rattling.

In the new designs the top of the control mechanism is nicely finished off by the provision of molded Bakelite rings which fasten to the rings of two of the control levers by means of hollow rivets. This is better shown in Fig. 5, which illustrates a control assembly as shipped from the Gemmer factory. These Bakelite rings have slots in them through which the levers extend, of sufficient angular extent to permit of the full range of movement of the levers. As the horn button is also of Bakelite, practically the whole top of the control assembly is of non-metallic material, which is pleasantly offset by the metallic levers.

Fig. 5 shows a type of control assembly designed to be completely removable and to allow of removal of the steering wheel and jacket tube without disturbing the gear itself. In this case bushings with taper seats and threads on them are keyed to the upper ends of the tubes, by forcing portions of the tube wall into slots in the bushings. The die-cast control lever rings have a taper hole through them and are secured to the taper bushings by means of nuts. The outer one of the concentric tubes in this assembly is a stationary tube to which is secured a steel disk with two opposite upwardly projecting prongs which serve as stops for the control levers and to support and anchor friction springs between the control lever rings. These springs form friction locks for the controls and also prevent rattle at this point. The stationary tube passes through the steering tube and is secured in the steering gear housing at the bottom. A pair of silencers are shown slipped over this tube.

Connecting Rod Strain Eliminated During *Machining* Operations

Methods employed at Olds Motor Works do away with need for straightening as work progresses. Minimum strains set up in forging.

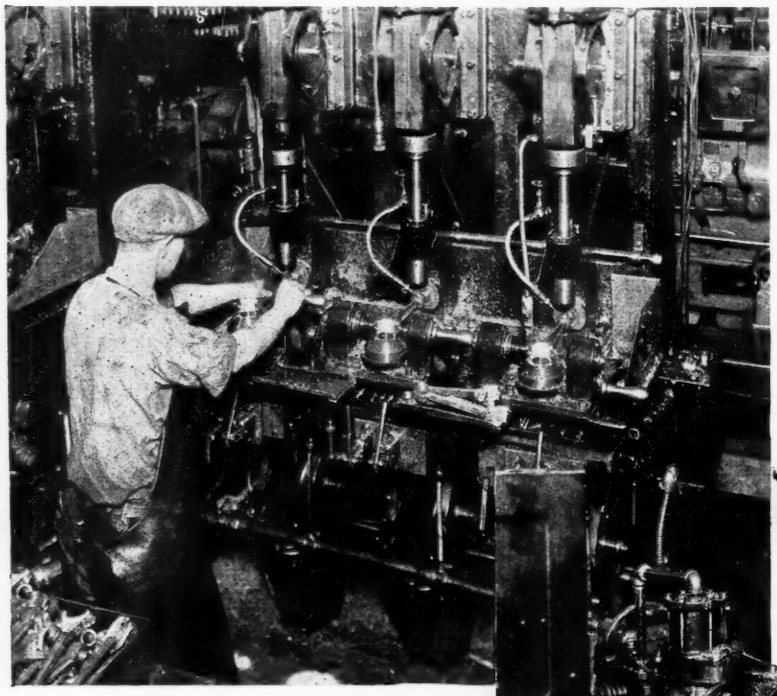
By K. W. Stillman

SCATTERED through the operation sheets covering connecting rod operations performed by most engine manufacturers will be found, generally, a number of straightening operations which are designed to compensate for the strains set up in the small forging during rather severe machining operations.

Some manufacturers, however, of which the Olds Motor Works is one, do not believe that this method offers a permanent cure for the difficulty and endeavor to eliminate trouble from bent rods by some other means.

At the Olds plant, locating methods and fixtures have been devised which permit all the necessary machining operations to be performed with a minimum amount of strains being set up in the forging. After straightening of strains caused by heat treatment takes place in the first operation in a coin press, the rod is not straightened again, but every effort has been made, and with success, to prevent its taking on further deformation during machining processes. By this method it is believed that the rod is more likely to retain its proper shape than if machining strains are permitted to occur and are removed before the rod is assembled in the engine.

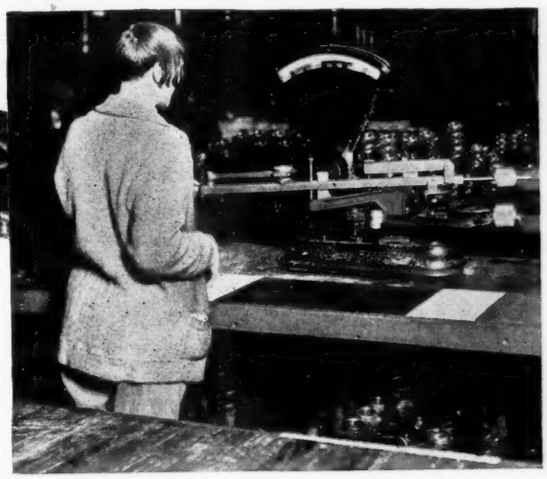
After the first coining operation both sides of both ends of the rod are ground in a parallel grinder primarily to remove most of the excess stock and to provide a fairly smooth surface to work from. Actually, this operation is only necessary on the big end, but the machine used was of such nature that it was just as easy to include a grinding of the sides of the small end also, so



Above—Special machines used for boring and reaming small holes in rods. The unique method of locating and supporting rods in machines so that they are not distorted is plainly seen

Right—A special three-way machine used for center boring connecting rods

Left — Checking an assembled rod and piston for alignment



Right—Completed rods are classified into weight series before assembly with pistons

this is done and saves some time in later operations.

The hole is drilled in the small end in a four-spindle boring mill and is reamed in a drill press. In these operations occur the first steps toward avoiding machining strains, and the work holding fixtures consist of knife edge clamps, one holding the big end and the other the small end. The big end clamp is of the V-type and locates the position of the hole in the small end from the outside of the metal surrounding the big end hole which has been found to be sufficiently regular in dimension for this purpose. By the use of these fixtures no clamping stresses are set up in the rod and the boring and reaming operations can be performed without causing any distortion.

Locating Points Prepared

Using the small hole as a locating point, the next operation prepares the three locating points which are used from then on throughout the machining cycle. The rod forging contains a raised surface on each bolt boss and one at the small end of the rod. These surfaces are milled and centered and provide a three-point support for all further machining operations.

One of the center holes is made a fixed depth within narrow limits and a fixed point in all work-holding fixtures enters this. Adjustable points enter the other two centers and line up the rod accurately but without strain. A pressure of 5 lb. has been found sufficient at the bolt boss centers to hold the rod while the big end is being bored and this pressure is not great enough to deform the rod, even though it has been designed to obtain maximum lightness with requisite strength.

Making use of these three locating points the rod is sawed in two and both sides of the bolt bosses are faced. Rotary mills are used for this work. The joint face of both the rod and the cap is then ground in a disk grinder and the large end bored in a four-spindle boring machine equipped with a work-holding fixture which brings the rod and the cap together in the same relation as they will be when they become assembled.

The bolt holes in the rod and in the cap are drilled in two separate operations in four-spindle drilling machines, in which two rods are drilled at once. The joint face of the rod is then chamfered, the bolt holes in the rod are reamed and the back of the bolt holes in the rod are chamfered, the latter two operations being performed in two-spindle drills.

Both ends of the bolt holes in the cap are chamfered and then the rod and cap are put together again in a fixture and the big hole chamfered, after which both pieces are washed.

Babbitting operations follow, the die casting method being used with machines in which two rods and two caps are babbitted at once. An electric head is used to ream the bolt holes in the rod and removes the gate and both the cap and rod are ground in a disk grinder.

The rod is then center-drilled in a special three-way machine and a special two-way machine is next employed to bore and ream the small end.

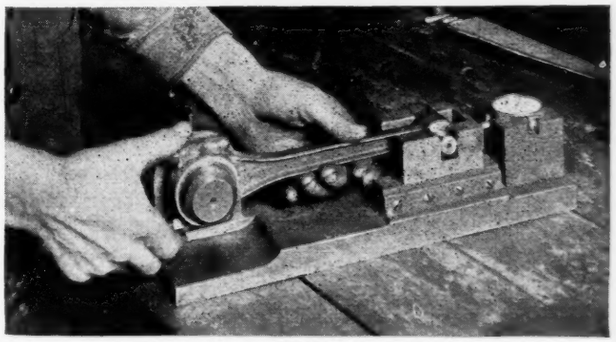
The bushing is pressed in the small end and a 3/16-in. hole drilled through the small end for oil.

The rod and cap are assembled next and the large end hole is first reamed in a drill press, after which both sides of the large end are chamfered, hollow milled and rough faced in a three-spindle drill press.

Holes Diamond Bored

The small end bushing is chamfered in a drill press and the oil groove is broached by hand. The next operation is performed in a special diamond boring machine in which both the large and small ends are finished to size, maximum tolerance in either diameter being 0.0005 in. In this operation, as in all previous sizing operations, the rod is held at three points as explained before, in such a manner that the machining process has practically no effect upon the shape of the rod. It remains in the same condition as it was when it left the coin press early in the machine line.

After filing the babbitt and burring, the large end is finish faced in a drill press, grooves are milled in both sides of the large end and the rod is ready for final inspection. Tolerance in the width of the big end is the same as for the bore diameters—0.0005 in.



Inspecting completed rods for alignment of wrist pin and crank pin holes

Crankshaft Torsional Stiffness Subject of Analysis

Test data used by British engineer gathered from 15 different crankshafts as used in aircraft, marine and automobile engines. Latter deflected mainly by crank arms.

AN ANALYSIS of the torsional stiffness of crankshafts is published by B. C. Carter, D. I. C., M. I., Mech. E., in *Engineering* of July 13. Dimensional and test data were gathered of 15 different crankshafts from aircraft, marine and automobile engines. Most of the aircraft engine shafts were tested for deflection under torque by the British Air Ministry, while data on the stiffness of the automobile engine crankshafts were supplied by a well-known firm of motor car manufacturers, and the data on the stiffness of marine engine crankshafts by the Brooklyn Navy Yard. In all cases the shafts were twisted in bearings with clearances approximately equal to those which would obtain in regular mountings.

Mr. Carter proposes the following empirical equation for the equivalent length of a plain shaft of the same diameter d_1 as the main bearings of the crankshaft, which, under the application of a certain torque, will flex the same as the crank under consideration, between points A and B, that is, between centers of main bearings on opposite sides of a throw:

$$l = (2b + 0.8h) + \tfrac{3}{4}\left(\frac{d_1^4 - \delta_1^4}{d_2^4 - \delta_2^4}\right) a + \frac{3\nu}{2}\left(\frac{d_1^4 - \delta_1^4}{h\,w^3}\right)$$

$$\frac{l}{d_1} = P + Q + R$$

$$\text{corresponding stiffness from } A \text{ to } B = \frac{G\,J}{l}$$

where $G = 11.8 \times 10^6$ lb. per sq. in. for steel, and

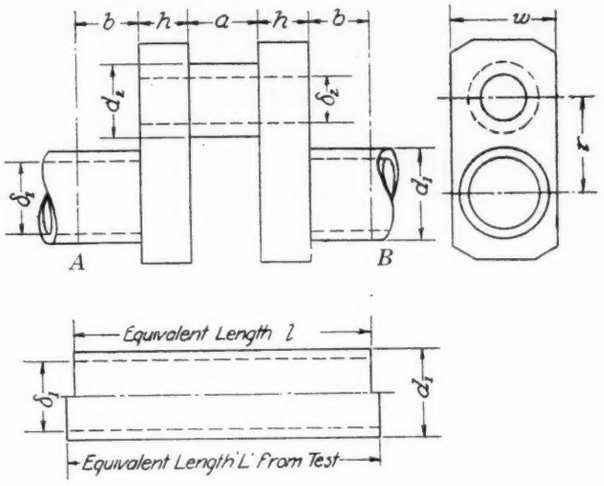
$$J = \frac{\pi}{32}\,(d_1^4 - \delta_1^4).$$

In the above equation the first term represents the stiffness of the main bearing, increased by an arbitrary amount 0.8 h to take account of the local yielding of the crank arms at the points of juncture with the main bearings and crankpin. The second term is proportional to the equivalent length of the crankpin with full torque transmitted through it. The third term is proportional to the twist which would result from bending of the crank arms in their own plane in transmitting a pure torque with no bearing restraints (so that one journal becomes displaced relative to the other) if simple beam equations were applicable.

It was found that the ratio of the stiffness of the crank to that of a continuous journal of the same length, which ratio is designated the stiffness factor, varied between 0.97 and 1.17 for marine engine shafts, between 0.45 and 0.71 for aircraft engine shafts and between 0.30 and 0.47 for automobile engine shafts.

Taking the test results to be exact, the errors in the calculated stiffness ranged from 6.4 per cent low to 8.2 per cent high for the marine engine shafts; from 10.2 per cent low to 4.8 per cent high for the aircraft engine shafts and from 3.8 per cent high to 13 per cent high for the automobile engine shafts.

Taking the five automobile engine crankshafts inves-



tigated by themselves and averaging results it is found that 47 per cent of the total deflection is due to the crank arms, 32 per cent to the main journals and 21 per cent to the crankpins.

The author explains the application of his formula for the stiffness of crankshafts to torsional resonance investigations as follows:

"In the case of an ungeared engine with a number of equal cranks connected to a heavy flywheel or propeller, the natural torsional frequencies of the equivalent flywheel system are given by

$$f = \sqrt{y}\,\frac{1}{2\pi}\,\sqrt{\frac{C}{I}},$$

where C is the stiffness between adjacent crankpin centers, and I is the equivalent flywheel inertia moment per crank. The quantity $\sqrt{y}$ is a nondimensional coefficient depending upon the number of throws and a quantity q, which is the ratio of the stiffness of the crankshaft section between the flywheel and the first crankpin center, to the stiffness C.

If $j + (l/2)$ denotes the equivalent length of shafting from heavy flywheel or air propeller to the first crankpin center, l being the equivalent length between adjacent crankpin centers, then $q = l/j + (l/2)$ and corresponding values of q and j are

q =	0.25	0.50	0.75	1.00	2.00
j =	3.5l	1.5l	0.83l	0.5l	0

If j be exact and an inexact value is taken for l, say $l_1 = l/1.1$, other quantities will have inexact values as follows:

q	0·25	0·5	0·75	1·0	2·0
	1	1	1	1	1
q^1	$3{\cdot}5\frac{l}{l^1} + 0{\cdot}5$	$1{\cdot}5\frac{l}{l^1} + 0{\cdot}5$	$0{\cdot}83\frac{l}{l^1} + 0{\cdot}5$	$0{\cdot}5\frac{l}{l^1} + 0{\cdot}5$	0·5
	$=0{\cdot}23$	$=0{\cdot}465$	$=0{\cdot}706$	$=0{\cdot}953$	$=2{\cdot}0$

Now $\frac{f^1}{f} = \sqrt{\frac{y^1}{y}}\sqrt{\frac{C^1}{C}}$, and when $\frac{C^1}{C} = 1{\cdot}1$, $\frac{f^1}{f} = 1{\cdot}05\sqrt{\frac{y^1}{y}}$, where $\sqrt{y^1}$ and $\sqrt{y}$ correspond to q^1 and q respectively, and to the number of crank throws concerned.

The relations between y and q are such that, for two throws, the value of $\sqrt{\frac{y^1}{y}}$ for fundamental frequencies increases steadily from about 0.97 when q = 0.25 to 1.0 when q = 2. The same is approximately true for three, four, six and eight throws. Thus an error of 10 per cent in the estimation of C will, in itself, result in an error of less than 5 per cent in determination of fundamental frequencies.

If a change of crank design be contemplated to modify the torsional resonance speeds, the corresponding effects upon the value of l need to be considered, because the frequencies are a function of $\sqrt{C/I}$.

New Oakland Plan Makes Hit With Salesmen

OAKLAND MOTOR CAR CO. officials became conscious several months ago that perhaps they might further improve their relations with the public by eliminating as far as possible annoying waits in the lobby.

Accordingly, Charles O. Miller, supervisor of purchases, had the clerk on the information desk by the entrance check the time of arrival of all callers having business with members of the purchasing department, and the time each caller had to wait before seeing his particular party.

In two months' operation of the system the average wait has been less than four minutes—3.16 to be exact. The best day's average was 1.5 minutes. This is the more remarkable in view of the fact that from 100 to 200 outside contacts are made daily by various officials of the company.

The system has particular application to Mr. Miller's department. Under his supervision are nine buyers whose contacts are all with commercial men. Every morning Mr. Miller sends to every member of the department the record of the preceding day, showing the number of contacts each man made and the length of time he kept his callers waiting.

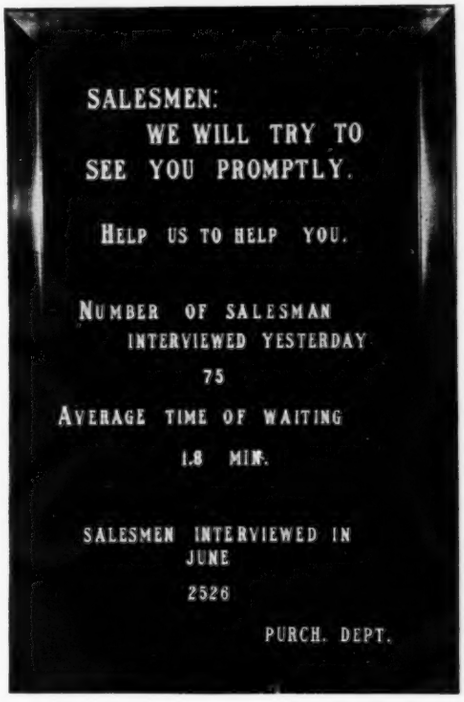
The plan has won the hearty approval of the commercial men. Greeting them as they enter the lobby is the sign:

"Our suppliers are as necessary to us as our customers. We want to see you.

"You are entitled to a prompt interview or a reason why you are kept waiting.

"Please remember the man following you."

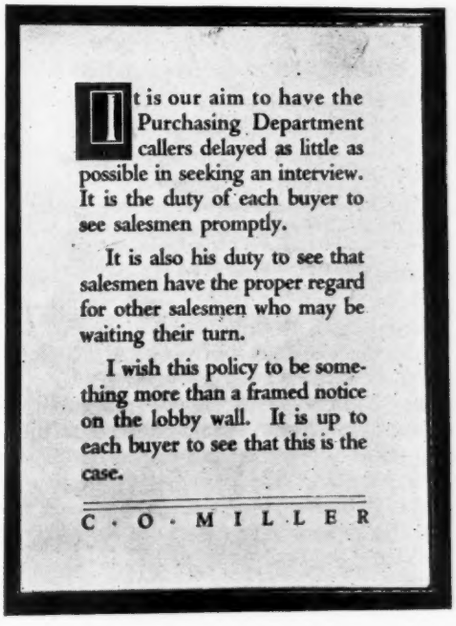
For the salesmen's information, a score card is



Sign which greets salesmen in Oakland lobby

posted in the lobby daily for the previous day telling the number of salesmen interviewed and the average time each waited.

Once into a buyer's office, the salesman sees another


It is our aim to have the Purchasing Department callers delayed as little as possible in seeking an interview. It is the duty of each buyer to see salesmen promptly.
It is also his duty to see that salesmen have the proper regard for other salesmen who may be waiting their turn.
I wish this policy to be something more than a framed notice on the lobby wall. It is up to each buyer to see that this is the case.
C · O · MILLER

Mr. Miller's courtesy sign

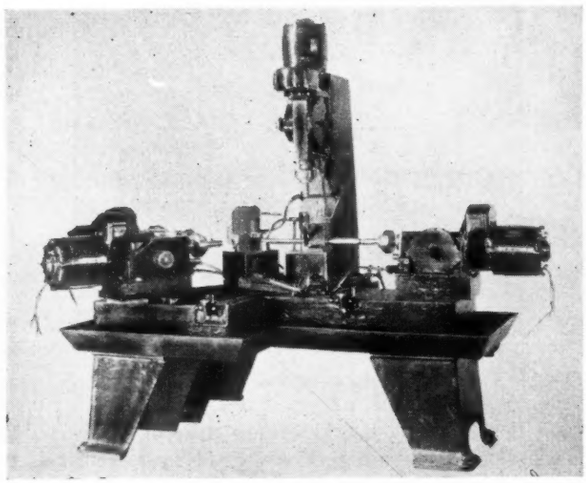
framed courtesy sign which is signed by Mr. Miller and which emphasizes the fact that, "It is our aim to have the Purchasing Department callers delayed as little as possible in seeking an interview. It is the duty of each buyer to see salesmen promptly."

NEW DEVELOPMENTS—Automotive

Milholland Drill

A SPECIAL machine has recently been developed by the Milholland Sales & Engineering Co., Indianapolis, which, while not particularly designed for automotive work, appears to be adaptable to some of the awkward drilling jobs to be found in many automotive plants.

The problem was to design a machine with which four holes of the same size might be drilled and spotfaced in seven different malleable castings. The problem was complicated by several conditions. The seven parts, all of which were to be handled by a single machine, varied in length as much as six inches; at one end of each piece two holes intersected at a 45 deg. angle and some of the "Y"s so formed were left hand and others were right hand.



Special purpose, four-way drilling machine developed by Milholland Sales & Engineering Co.

As shown in the accompanying illustration the job was handled by means of four automatic drill head units mounted on a base and controlled by compressed air valves mounted on the front edge of the bed.

The intersecting holes were cared for by arranging two individual motor driven drill units in saddles which are doweled and bolted to a swivel plate which, in turn, carries a "Y" bushing block and quick-acting work clamp. By swiveling the plate carrying the two saddles and bushing block, either right or left-hand ends can be drilled.

To compensate for length variation in the work the swivel plate is mounted on a false table which is located on the center line by means of a very large keyway cut in the bed proper. This false table is moved in and out by means of a small handwheel and screw and is located at the proper positions by dowel pin and bolts.

Directly under the vertical spindle is a screw type drill bushing which is also used for clamping the work. It has an Acme thread, and a pinion pressed on the end of the bushing meshes with a hand clamping gear. Rotation of the gear clamps and unclamps the work.

Because the two holes at one end of the piece intersect, it was necessary to arrange the controls in the proper sequence, which was done by providing two air control valves, one to be operated by the left hand and the other by the right hand.

The automatic drill head units are independent and have separate driving motors. Feeding of the tools is accomplished by a plate cam. A Tuthill coolant pump supplies cutting compound.

The feed cams are designed to give drill feeds of .015 in. and spotfacing feed of .005 in. per rev., the cam contours being changed when the spotfacer's tools approach the work.

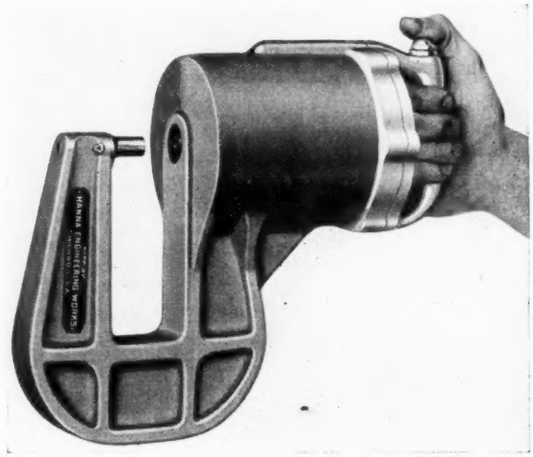
Disk Sanding Machine

THE UNITED STATES ELECTRICAL TOOL CO., Cincinnati, has recently brought out a new electric disk sanding machine which operates a nine-inch disk at 3600 r.p.m. under load. A fan-cooled ball bearing motor is employed with a two-pole trigger switch in the operating handle.

Fine, medium and coarse sanding disks are furnished as are also 12 ft. of flexible rubber covered cable, two-piece attachment plug and armored cable guard. The weight of the new tool is 12 lb.

Portable Pneumatic Riveter

THE illustration herewith is of a portable pneumatic riveter capable of exerting a pressure of one ton on the dies and weighing only 15 lb. It is being manufactured by the Hanna Engineering Works, Chicago, Ill. The riveter has a depth of throat (or reach) of 5 in., a 2-in. gap and a 1-in. stroke. It is capable of driving tubular bronze or steel rivets up to 3/16 in. diameter and is particularly adapted for riveting automobile hoods, instrument panels, bodies, etc. There are also interesting possibilities of application of the riveter to the assembling of airplanes of the all-metal type.

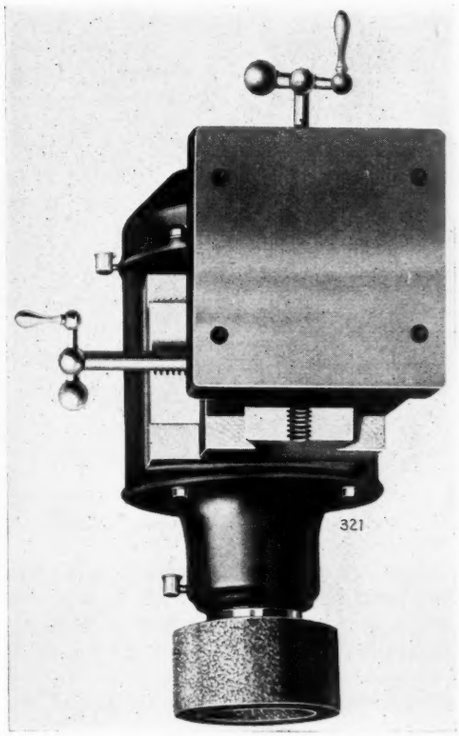


Hanna pneumatic riveter

Parts, Accessories and Production Tools

Hisey Wolf Grinders

THE HISEY WOLF MACHINE CO., Cincinnati, has brought out three new types of vertical spindle grinders, developed primarily for thrust grinding with the spindle in horizontal position or with grinding wheel swung down at any angle. The spindle illustrated is provided with double slide adjustment. Of the other



Hisey Wolf double slide adjustment vertical spindle grinder

two models one is equipped with vertical slide and the other with horizontal slide adjustment only.

These grinders are made in 1, 2 and 5 hp. sizes for alternating current and in 3 hp. for direct current. They are ball bearing equipped throughout with the bearings constantly lubricated in an oil bath and fully enclosed in leak-proof chambers.

Fan-Cooled Electric Motor

A TOTALLY inclosed, fan-cooled electric motor has been developed by The Cleveland Electric Motor Co., Cleveland, to meet severe operating conditions. The motor is built with a double shell. The inner shell, which incloses the entire motor, is completely dust-proof and is mounted on the outer shell to allow a free air space between them, the shaft passing through both shells. One end cover of the outer shell is provided with holes for admitting air.

At the end away from the motor pulley a fan is mounted which draws in air and blows it over the outer surface of the inner shell, which provides ample cooling but prevents dust from entering the motor.

Allis-Chalmers Motors

A NEW line of totally enclosed, fan-cooled motors from 1 to 50 hp. has been developed by the Allis-Chalmers Mfg. Co., Milwaukee. All the active parts in these new motors are enclosed to prevent contact with outside air, dust, etc. Heat is dispersed by a volume of cooling air forced around and across the parts, the path of the air being controlled by a circumferential air jacket.

Cast iron bearing housings are attached to stator ends with machined fits which, with grease packed bearings, form complete end closures. Internal parts of the motors are accessible by removing housings.

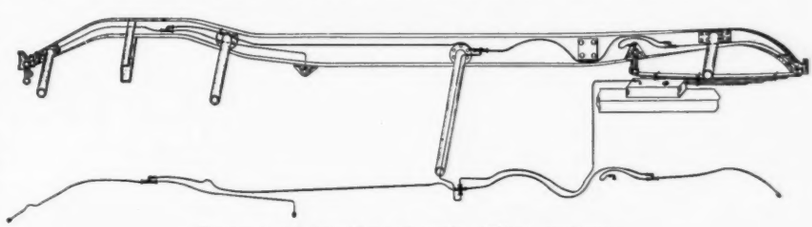
THE Fiat firm of Turin, Italy, plans to install an assembly plant in England and to manufacture a good many of the parts for its cars for the British market there. Only the engines will be manufactured in Italy.

Stanley Lubricating System

A CHASSIS lubricating system that is actuated by the exhaust pressure has been placed on the American market under the name of the Stanley automatic chassis oiling system and is now standard equipment on the Moon car.

A tank (of 1 qt. capacity in the case of the Moon) is mounted on the exhaust manifold, and a system of copper tubing containing wicking leads to the different points to be oiled. When the engine is running, heat from the exhaust communicated to the oil in the tank produces a pressure in the latter, and this pressure, together with the capillary force of the wicking, forces oil through the lines. When the engine is shut down the temperature of the oil and air in the tank decreases and the resulting contraction exerts a suction effect on the lines which prevents dripping.

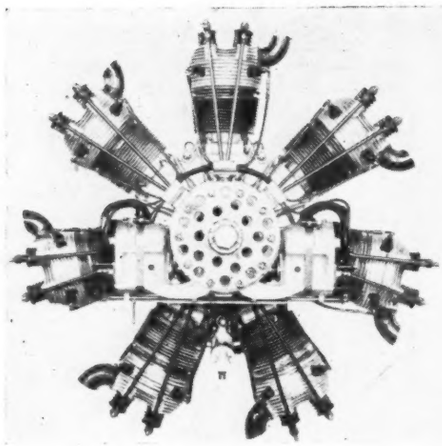
The system is therefore entirely automatic and requires no attention on the part of the operator, except for the fact that the tank must be refilled with oil at intervals. One quart will last for from 2000 to 4000 miles, it is claimed, and no special lubricant is required, the same oil being used as for the engine.



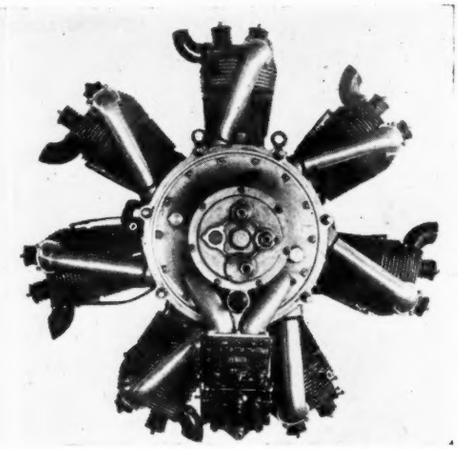
Layout of Stanley chassis oiling system

Foreign Manufacturer Introduces New 240 Hp. *Aircraft* Engine

Walter-Castor powerplant, built in Czechoslovakia, is fixed radial air-cooled type with seven cylinders and normal speed of 1750 r.p.m. Has passed official tests.



Walter-Castor engine, propeller end



Rear end of Walter-Castor engine

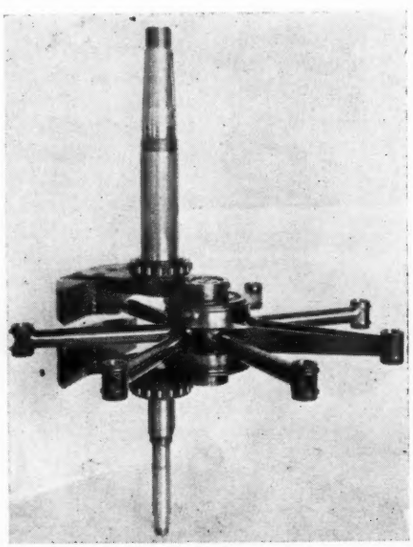
THE Walter Works, of Prague, Czechoslovakia, which already have gained considerable experience in the manufacture of air-cooled engines, have added to their line a 240 hp. fixed radial type. The engine was recently tested under the supervision of a committee of the Ministry of Public Works and passed successfully through the tests specified by the International Commission on Aerial Navigation. The different alloy steels used in the construction of the engine are from the works of the Poldi Steel Co.

The cylinders are machined up from a solid block of hammered steel and have the cooling fins and the flange at the lower end by which the cylinder is bolted to the crankcase, turned. At the top the cylinder is screw-threaded so the cylinder head can be screwed on. The cylinder heads are aluminum alloy castings, heat-treated. They are screwed onto the cylinders and locked in place by means of a device on which a patent has been applied for. The advantage of this construction is that the cylinder heads are readily interchangeable. Bronze valve seats are pressed into counterbores in the head and are rolled. The rocker levers have roller bearings on the rocker lever pins which latter are supported by pillars screwed into substantial bosses on the cylinder head.

The valves are made of tungsten steel and their stems pass through removable bronze guides. Each valve is fitted with three helical springs.

The pistons are cast of aluminum alloy and have slightly concaved heads. Piston heads are reenforced by ribs which also reenforce the piston bosses. There are two compression rings on each piston, in addition to an oil ring.

The master rod is made of chrome-nickel steel of I section and the articulated rods are of circular section. The master rod is supported on the crankshaft through two roller bearings. It is said that this construction has been fully proved out in other Walter engines and that, although the connecting rod head diameter is increased by the use of roller bearings, this enlargement is fully warranted by the long wear of these bearings. The connecting rod assembly is fully counterbalanced.



Crank and connecting rod assembly

The crankcase is made in halves and also has two header plates. The halves are held together by steel bolts which also serve to fasten the engine down to the engine bearers of the plane. The crankshaft, which is a forging of Poldi steel, is supported on three roller bearings taking the radial loads due to gas pressure and inertia forces, and the third, a thrust bearing located in the front cover of the engine, taking the propeller thrust. The crankshaft is made in two parts which are joined together by a method which was

originated in the Walter Factory and is said to assure perfect rigidity. The crank arms are extended to the opposite side of the main journals and are provided with counterweights.

A cam disk, which is located in the forward compartment of the crankcase, is provided with two series of cams, the four forward cams actuating the exhaust valves and the four rear cams the inlet valves. Each set of valves is actuated through pushrods with roller cam followers. The pushrods transmit the motion to the rocker levers which are fitted with helical retracting springs. The cam disk is driven from the crankshaft through a train of gears in an appropriate ratio.

A Zenith dual carburetor, Model 60 DCJ, is fitted to the rear cover and supplies mixture to a diffusing chamber formed between the end wall of the rear half of the crankcase and its cover. A rotor mounted on the crankshaft is located in this diffusing chamber and leads from the chamber extend to all of the inlet valves. The carburetor as well as the diffuser chamber is heated by oil from the engine.

Lubrication of all parts of the engine is effected by means of a gear-type pump located in a cavity in the rear cover of the crankcase and driven from the crankshaft through a pair of spur gears. All of the oil draining from the various bearings collects in a sump communicating with the lowest part of the crankcase. The oil enters this sump through a strainer and is drawn from it and forced back to an outside oil tank by a drain pump, passing through the jackets of the carburetor and the diffuser chamber on its way.

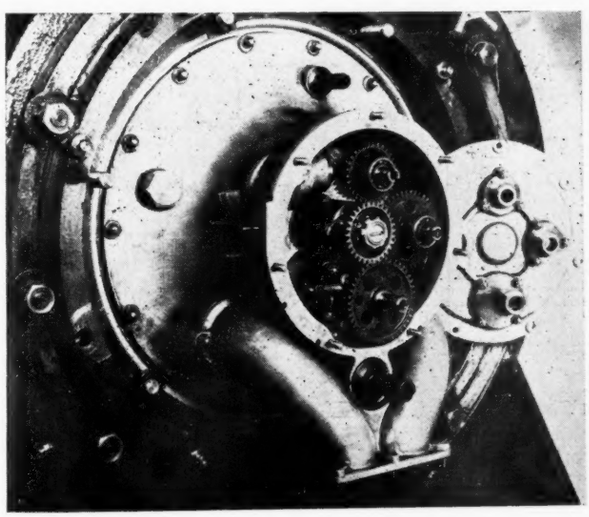
Dual Ignition Employed

Dual ignition is employed and two magnetos are fitted on brackets on the front case cover—either Bosch or Scintilla. The magnetos are driven by two gears from the cam disk drive.

Auxiliary drives for the fuel pump, the distributor, the starter and the tachometer are inclosed in the rear cover which has a horizontal bottom. This method of mounting the accessories in the rear cover, where they are completely inclosed, assures absolute "cleanness" of the rear part of the engine. The drive for the generator is also mounted on the rear cover.

Following are the principal dimensions of the Walter-Castor engine:

Number of cylinders	Seven
Bore	5.314 in.
Stroke	6.693 in.
Compression ratio	6:1
Nominal output	240 hp.
Normal speed	1750 r.p.m.
Maximum output	260 hp.
Maximum speed	1850 r.p.m.
Equivalent output	340 hp.
Consumption of a gasoline-benzol 50-50 mixture of a spec. grav. of 0.800-0.810, per brake horsepower-hour	0.484-0.506 lb.
Consumption of oil per horsepower-hour	0.35-0.44 lb.
Weight of engine with propeller hub	545 lb.



Auxiliary drive at rear of engine

The Walter-Castor engine is designed for use on both military and commercial planes. We are informed that its high compression ratio permits of increasing its power by 100 hp. over the normal rating at full throttle at ground level, and that this represents a reserve of 40 per cent of its rating for altitude work.

Cromovan Triple Die Steel

A NEW steel for die-making purposes has been placed on the market by the Firth-Sterling Steel Co., of McKeesport, Pa. It is a high-carbon, high-chromium type, and improvements have been made in it which are said to have eliminated faults that have been common to this type of steel in the past.

It is claimed for Cromovan steel that it is easy to machine, where other steels of the same type are machinable only with difficulty, even when in the annealed state. This machinability is an important factor, as very frequently die users refuse to use steels of this type because their use has become associated with high die-making cost, due to their hardness. By mill inspection the maximum hardness of Cromovan steel is held down to 210 Brinell in the annealed condition.

It is also claimed that Cromovan shows practically no dimensional change during the hardening process. This also is important, because many dies are ruined by contraction during hardening. Cromovan has been used in cases where dimensional changes measurable only in thousandths of an inch could not be tolerated.

Cromovan can be air-hardened as well as oil-hardened. Some manufacturers have found this to be a distinct advantage in making long and narrow dies. Dies of such form, if quenched in oil or water, undergo a certain amount of distortion due to warpage. Owing to its air-hardening properties, Cromovan can be heated to the quenching temperature and then put in a press and permitted to "air-quench" under pressure. This is said to insure a perfectly straight die that requires no grinding or other subsequent operation to offset warpage.

It is further claimed for Cromovan triple die steel that it is exceptionally hard and has great enduring qualities after the final heat treatment. Dies made of it therefore have an exceptional service life. It is said to be essentially a high production steel, particularly suited for use where the number of units to be turned out runs into large figures.

AVERAGING 80½ m.p.h. for a distance of 434 miles, Louis Chiron won the recent San Sebastian Grand Prix on a 122 cu. in supercharged straight-eight Bugatti, after a five-hour struggle with Robert Benoit, the world's champion, on the same make of car.

This race in Northern Spain was by invitation to 12 of the best drivers in Europe, their expenses being paid by the organizing club. The six-cylinder 426 cu. in. supercharged Mercédés which won the recent German Grand Prix was withdrawn at the last moment.

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	PASSENGER CARS						TRUCKS						ELECTRICS		PARTS
	Up to $1,000		$1,000 to $2,000		Over $2,000		Up to 1 Ton		1 to 2½ Tons		Over 2½ Tons				
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value
Austria	7	$4,151	6	$8,521	1	$1,776	2	$1,296							$25,784
Azores and Madeira Islands	3	1,235					2	850	1	753					113
Belgium	1,429	752,318	89	98,165	86	192,168	524	220,308	16	6,696					258,103
Bulgaria	10	5,407	7	6,013											1,571
Czechoslovakia	15	9,113	21	24,611			1	806	2	3,081					14,840
Denmark and Faroe Islands	636	328,421	118	122,160	7	17,517	170	84,952	28	18,435					141,261
Esthonia	3	2,464	3	2,715			4	2,000	1	1,053					1,284
Finland	179	110,040	91	104,758	15	41,226	47	48,319	15	9,515					50,459
France	28	18,632	52	60,468	33	85,555	112	52,751							104,204
Germany	1,410	762,265	367	367,115	93	218,923	83	57,681	188	82,437	1	195			555,160
Gibraltar									1	960					410
Greece	126	66,931	56	59,693	2	4,499	94	41,144	10	6,050					18,278
Hungary	35	22,152	19	18,561	8	16,200	10	6,120							3,990
Iceland	6	4,144					1	995							671
Italy	360	180,722	82	92,989	12	26,935	46	23,842	43	23,440					76,714
Latvia	8	5,327	1	826											491
Lithuania	10	5,585			1	2,003			2	960					
Malta, Gozo and Cyprus Islands	8	5,613	1	1,668			4	1,770	2	960					2,587
Netherlands	392	205,086	129	102,291	30	73,704	17	15,706	119	69,775	1	2,841			87,499
Norway	89	47,593	36	38,838	8	21,864	23	15,994	24	23,884					16,343
Poland and Dantzig	94	52,313	40	35,671	3	6,985	46	32,437	5	4,151					13,222
Portugal	123	71,113	27	26,145	4	8,465	39	31,108	24	24,848					8,452
Rumania	398	214,532	123	124,316	13	23,109	145	64,638	2	960					22,787
Russia	25	8,524	24	35,227	1	1,672	7	2,587	34	26,434					22,123
Spain	764	437,315	290	362,524	61	141,319	371	175,562	67	83,605	2	2,770			86,195
Sweden	2,621	1,488,200	367	371,469	31	65,513	809	409,082	97	51,601	2	1,950			74,519
Switzerland	216	136,328	157	183,682	21	45,595	2	1,462							22,498
Turkey							12	6,500							
United Kingdom	466	254,400	137	178,395	52	122,078	678	309,103	51	27,145					509,400
Irish Free State	7	4,375	5	4,971											19,885
Yugoslavia	45	21,444	1	1,234	1	2,189	8	3,400	2	1,714					778
United States															
British Honduras	1	900													2,990
Canada	3,567	2,140,611	780	943,452	102	311,531	182	125,484	321	408,332	88	321,436	2	3,661	5,050,321
Costa Rica	5	3,710	12	12,009	5	10,763	1	922	8	18,136					6,549
Guatemala	6	5,702	19	22,754	4	10,392	2	1,383	9	14,006					12,289
Honduras	2	1,177			1	1,984	2	1,180	2	2,204					3,351
Nicaragua	1	550	1	1,146	1	1,756									1,798
Panama	51	26,166	25	27,549	1	2,036			5	2,851					42,282
Salvador	1	1,000	7	9,268	2	4,792									3,043
Mexico	1,001	486,763	108	129,532	12	27,481	152	81,019	42	55,419	4	16,330	4	2,600	102,575
Miquelon	2	900													251
Newfoundland	73	43,419	14	14,472			9	4,608							2,993
Barbados	4	2,220	2	1,700			1	917	6	3,592					2,259
Jamaica	61	38,031	5	4,308	1	2,742	10	5,072	5	3,461					24,006
Trinidad and Tobago	12	7,411	3	3,031			3	2,218							3,538
Other British West Indies	17	8,100					5	1,752	2	790	2	2,250			4,027
Cuba	468	186,617	44	59,203	10	28,071	25	6,657	22	22,585	10	32,750			84,391
Dominican Republic	118	64,706	24	25,535	8	18,495	19	12,210	4	7,936	8	3,591			22,226
Dutch West Indies	15	8,480	1	1,034	1	2,457	4	2,163	2	960					2,847
French West Indies	5	2,010					2	1,130							795
Haiti	10	4,894	13	10,559	1	1,800	1	1,254	4	6,534					12,438
Virgin Islands							1	400							472
Argentine	2,597	1,299,978	641	653,327	82	181,754	1,320	731,284	244	328,638	72	201,368			503,246
Bolivia			1	1,612	2	4,656	4	3,265	1	3,184					4,215
Brazil	1,981	893,020	446	463,290	51	113,624	954	443,446	290	216,577	2	6,295			343,735
Chile	98	46,576	123	124,294	12	26,867	12	6,350	30	43,455	6	15,338			59,627
Colombia	35	21,327	71	81,412	39	95,932	15	14,380	48	91,688	3	6,754			73,097
Ecuador	14	7,218	13	13,733					6	5,548					1,041
Falkland Is.															
British Guiana	2	1,501							1	1,000					1,734
French Guiana															25
Dutch Guiana	3	1,230													41
Paraguay	15	7,461	2	1,680					6	2,153					2,194
Peru	93	48,795	30	35,644	13	25,050	5	4,229	24	20,479	1	4,830	3	5,720	34,109
Uruguay	303	158,318	75	87,434	8	23,504	63	32,402	39	33,605	5	17,070			78,483
Venezuela	29	15,359	40	43,983	5	8,989	22	18,698	12	14,421	2	5,040			42,853
Aden	10	5,295	1	870											1,870
British India	245	161,872	158	142,977	5	11,651	215	145,664	56	47,025	1	1,306			135,160
Ceylon	68	48,328	28	24,658			25	17,384	4	6,752					16,273
Straits Settlements	3	2,123	1	852	1	3,550									52,719
China	117	72,874	2	3,436	2	4,212	39	31,669	13	11,621					44,019
Java and Madura	559	276,296	90	93,608	7	15,471	387	184,823	21	24,043					68,672
Other Dutch East Indies	38	24,592	6	6,282	2	4,648	32	21,729	8	12,511					16,466
French Indo-China	8	3,280													750
Hejaz, Arabia and Iraq	11	4,889	2	2,275			12	6,763	16	7,680					4,957
Hongkong	22	12,267					12	5,834	1	922					15,570
Japan	752	466,544	64	87,046	14	36,893	26	16,886	125	72,328					524,094
Kwantung	23	14,029	1	1,333					1	1,439					2,679
Palestine and Syria	112	62,486	31	29,257	10	32,625	10	6,304	25	11,423					14,555
Persia	30	13,910	7	6,321	1	1,814	121	63,701	1	2,486					9,441
Philippine Islands	267	149,813	40	52,996	11	32,577	146	64,689	16	18,504	4	11,609			84,693
Russia							4	2,775	2	2,010					1,760
Siam	7	4,990					16	11,407							3,782
Turkey	149	96,194	6	6,149			91	42,974	20	13,482	1	1,800			12,089
Other Asia															
Australia	3,351	1,475,880	530	557,662	47	105,370	853	456,033	129	127,614	8	13,245			376,945
New Zealand	710	417,310	113	111,314	35	83,822	6	5,548	36	45,959	2	2,690			63,732
British Oceania			2	2,661											958
French Oceania	3	1,130													335
Other Oceania															
Belgian Congo	3	1,956	2	1,596					5	2,194					594
British West Africa	12	10,040	9	10,423			78	68,543	17	27,465					67,812
British South Africa	1,690	935,639	433	469,687	21	40,410	138	104,271	28	45,082					146,554
British East Africa	25	16,960	8	7,090			61	48,964	2	1,823					38,366
Canary Islands	6	4,006	6	6,906					1	1,420	6	10,926			2,626
Egypt	262	139,542	55	52,862	4	9,043	65	31,770	14	8,256					76,053
Algeria and Tunis															427
Other French Africa	21	11,584					21	9,241	1	1,382					5,220
Italian Africa	17	6,695					1	917							
Liberia	4	2,257	2	3,121			6	4,816	2	1,750					1,170
Madagascar									1	1,056					430
Morocco	18	8,010	7	6,501			35	14,440	6	8,889					10,224
Portuguese East Africa	11	7,333	10	9,887											6,191
Other Portuguese Africa	12	6,482					10	4,300	1	1,280					3,148
Spanish Africa			2	2,878							2	792			137
Total	28,669	$15,224,499	6,365	$6,905,635	1,504	$2,406,057	8,481	$4,484,251	2,419	$2,282,407	233	$683,176	9	11,981	$10,479,933

for June, 1928 | Canadian Exports

TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
Casings		Inners		Solids		Up to $500		$500 to $1,000		Over $1,000					
No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
															Austria
2,774	$58,627	1,904	$8,945												Azores and Madeira Islands
209	2,607	109	199												Belgium
3,431	42,366	2,487	4,641											$58	Bulgaria
															Czechoslovakia
3,045	49,451	2,912	7,074			56	$24,234	10	$8,668	4	$4,484				Denmark and Faroe Islands
14,075	156,200	8,258	16,730	2	$43	9	3,897							92	Esthonia
114	1,761	214	530												Finland
3,973	56,442	4,152	8,693												France
3,872	45,012	1,550	3,707	4	154										Germany
15,765	188,589	7,594	16,421	12	921					2	2,968			782	Gibraltar
43	508	5	13												Greece
1,071	15,173	372	824												Hungary
1,454	19,869	761	1,748												Iceland
65	1,061	55	125												Italy
4,045	33,483	1,046	2,285	57	1,364										Latvia
115	1,332	96	214			2	770								Lithuania
4	63	4	12									28	$10,022	45	Malta, Gozo and Cyprus Is.
52	544	72	124			9	3,446	11	6,602						Netherlands
3,420	48,141	3,333	7,201			8	3,904			1	1,141			268	Norway
2,967	50,390	2,043	4,947	16	1,099	55	21,264	5	3,000						Poland and Dantzig
1,402	22,815	1,924	4,860	40	670					1	1,148				Portugal
910	13,481	539	1,316												Rumania
1,898	22,999	1,736	3,199			118	45,476			13	14,867	12	4,295		Russia
4	40	4	8			1	375	35	28,312	1	1,482			222	Spain
8,811	164,280	4,401	13,935	67	3,203										Sweden
3,467	49,920	2,910	6,676	2	159										Switzerland
3,431	50,033	2,283	7,130												Turkey
99	1,392									1	1,148				United Kingdom
4,527	47,496	1,504	2,827	100	1,358	157	54,984	156	88,708					2,500	Irish Free State
1,275	7,935	502	583											592	Yugoslavia
296	3,728	256	530							1	1,148				United States
						10	1,800	3	2,100			1	2,000	5,198	British Honduras
64	527	66	100	4	78										Canada
1,126	14,708	1,506	2,909	93	1,729										Costa Rica
772	13,809	388	1,070			1	351			2	2,512			52	Guatemala
880	14,640	663	1,694			2	817	1	974	1	1,130				Honduras
96	1,965	169	367	30	1,722					1	1,166				Nicaragua
80	1,247	195	460												Panama
1,825	22,207	1,692	3,311	29	829	5	1,877			8	9,339				Salvador
355	6,627	487	1,155	24	764	2	770								Mexico
11,544	123,353	7,592	14,707	111	5,139									38	Miquelon
						1	480					1	358		Newfoundland
360	4,166	642	1,062	2	80	15	6,278	1	1,000			3	1,051	498	Barbados
21	427	12	66			4	1,636			3	3,279			25	Jamaica
134	2,107	8	17			23	8,581		1			12	4,132		Trinidad and Tobago
26	335					10	3,935	6	3,540	1	1,195	10	3,553		Other British West Indies
196	1,671	46	75	20	569	7	2,790	1	511			2	693	36	Cuba
13,053	127,993	9,087	13,091	976	29,489					3	3,766				Dominican Republic
697	12,535	416	1,338	68	2,676									87	Dutch West Indies
450	6,070	427	947	16	470							4	1,432	17	French West Indies
11	96	12	26			4	1,498							8	Haiti
698	9,482	667	1,440	20	959	16	5,724	1	826	3	3,247				Virgin Islands
20	189	59	78											133	Argentine
10,674	128,577	8,957	15,679	140	5,593	80	30,104	10	8,767						Bolivia
140	4,367	477	1,353							2	2,930				Brazil
16,055	154,166	2,487	4,549	305	12,108	55	20,993	9	8,266	19	20,893				Chile
1,105	16,808	375	1,000	56	2,698	116	46,000	17	9,054	2	2,287	53	21,041	229	Colombia
2,654	51,942	542	1,493	60	3,607	25	9,601	4	2,155	3	3,443			88	Ecuador
190	3,161	225	494	3	62	4	1,590	2	1,002	2	2,293				Falkland Is.
															British Guiana
12	80			5	140	6	2,620					2	760	66	French Guiana
		20	36												Dutch Guiana
		6	31			1	380								Paraguay
105	1,940					14	5,328					10	3,579	17	Peru
1,306	27,489	1,034	5,388			23	8,860	6	3,156	2	2,595	56	20,448	25	Uruguay
2,184	30,459	1,548	2,982	37	3,870	29	11,796	4	3,624					52	Venezuela
1,324	29,748	903	2,403			12	4,493	1	974			63	22,771		Aden
2	28	4	11			4	1,452					1	359	2,096	British India
3,354	40,230	1,680	3,411	48	1,979	710	261,216	73	53,880	14	18,003	376	127,906	53,151	Ceylon
577	6,124	333	792	18	913	103	38,993	2	1,024	2	2,314	26	9,020	1,378	Straits Settlements
13,949	108,770	2,508	4,060	35	1,332	198	69,557							11,849	China
1,938	23,275	1,998	3,454	56	1,191	54	20,869			1	1,121				Java and Madura
2,219	21,622	1,256	1,779	34	1,022										Other Dutch East Indies
1,402	13,551	475	850			212	75,383			10	12,593	22	6,292	4,316	French Indo-China
398	5,119	385	896												Hejaz, Arabia and Iraq
378	4,557	380	760			27	10,829	1	858			4	1,312		Hongkong
15	208	5	10			14	5,440	6	3,548					50	Japan
11,917	121,740	13,426	19,441	891	19,221					6	6,376			8	Kwantung
															Palestine and Syria
757	9,321	621	1,373			36	13,953			2	2,296	16	5,727		Persia
48	2,813	112	577			4	1,570					16	6,254		Philippine Islands
8,501	93,642	7,765	14,859	244	6,105										Russia
														2,544	Siam
															Turkey
825	7,731	716	1,019	22	954										Other Asia
												56	21,980	14,921	Australia
1,029	13,838	264	1,521	315	14,175	435	134,684	152	80,344			22	7,347	66,491	New Zealand
914	12,052	315	1,279	84	3,651	332	127,881	91	57,076	9	9,626				British Oceania
3	54	4	14												French Oceania
26	356	28	61											1,636	Other Oceania
						5	1,700	2	1,150			30	10,881		Belgian Congo
						5	2,172					107	37,190	17,458	British West Africa
1,467	42,793	1,340	5,183			51	18,759					28	9,597		British South Africa
4,448	55,442	1,343	2,915	49	1,754	344	121,546	39	21,800			135	48,467	3,606	British East Africa
673	9,258	502	1,391			59	22,467	10	5,340			6	2,148		Canary Islands
893	11,830	210	576	40	1,679	8	3,174					20	7,159	21	Egypt
1,250	14,000	1,770	3,609	12	287	85	33,368	2	1,716	6	7,314				Algeria and Tunis
70	1,972	64	352									20	7,081		Other French Africa
46	549	130	322												Italian Africa
								1	533						Liberia
155	2,314	219	520												Madagascar
															Morocco
203	2,939	248	456			60	24,501	12	6,265			14	5,111	116	Portuguese East Africa
						4	1,380			1	1,233				Other Portuguese Africa
326	3,913	390	841									2	716		Spanish Africa
216	3,197	54	157												
212,770	$2,601,867	132,279	$277,307	4,147	$135,816	3,630	$1,327,546	674	$414,773	127	$149,337	1,158	$410,682	$190,769	Total

First with the News

Reliable and Accurate

News of the Industry

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Demand Here and Abroad Sustains High Production

PHILADELPHIA, Aug. 25—Indications are that August production and sales of automotive products will set a new high record. Strong domestic demand and an active foreign market are responsible for the unusually high seasonal level of business and there are no signs at present that volume in the months immediately ahead will not be at or near the best marks of previous years.

Production is easing off slightly, in line with the seasonal trend, but sales have shown a contrary tendency. The midsummer new model announcements have now been virtually completed and interest in the innovations is at a peak. The factories that have made changes in their lines are operating at top speed to meet demand from the field.

The used car market is active, and dealers who are cautious in making allowances are finding no difficulty in keeping stocks down. With new car stocks also at a moderate level, considering the volume of business in new cars, dealers are in an unusually favorable position.

North East Electric to Acquire Service Company

ROCHESTER, N. Y., Aug. 20—A special meeting of common stockholders of the North East Electric Co. has been called for Aug. 30 to pass on a proposal to acquire all the common stock of the North East Service, Inc., which handles the retail and service branch of the company's business.

Stockholders for both companies are virtually the same and the purposes of the acquisition is to permit simplification of the North East company's operations. Increase in the authorized number of North East Electric common shares will be voted on to permit the acquisition of the service company shares through an exchange on the basis of two shares of North East Electric stock for one of the service company.

Earnings on the service company stock have been considerably more than twice the earnings on each share of common stock of the North East Electric Co. North East Service, Inc., has 25,000 shares of common stock outstanding. If the proposed exchange is approved the North East Electric Co. will be able to pay dividends at the rate of $2 per annum.

U.S. July Production Increased to 390,445

WASHINGTON, Aug 22—Production of cars and trucks in United States plants in July totaled 390,445, according to Department of Commerce report this week. This compares with 396,967 in June this year and with 268,485 in July last year. Figures on Canadian production in July are not included.

Production in the first seven months in United States factories totals 2,592,592 against 2,337,459 in the 1927 period.

Car production in the United States in July totaled 337,933 against 356,439 in June and 236,868 in July last year. Truck production in United States factories in July totaled 52,212, a sharp increase from the June total of 40,528 and from the July, 1927, total of 31,617.

Car production in the United States in the first seven months totaled 2,303,660 against 2,039,488 last year. Truck production in the same period totaled 288,932 against 297,971.

Midland Earnings Increase

DETROIT, Aug. 21—Midland Steel Products Co. report earnings for July of $294,002 after all charges, except Federal taxes. This compares with $206,209 for July, 1927, a gain of 42 per cent. For the first seven months the company earned $1,817,367, after all charges but before Federal taxes and profit sharing, compared with $1,551,566 in the same period of 1927, a gain of 17 per cent.

Tire Price to Factories Cut

AKRON, Aug. 24—Price reduction of 8 to 10 per cent will be made effective Sept. 1 by all leading tire manufacturers on tires sold to car and truck manufacturers as original equipment. There will be no change in prices on tires sold for replacement.

Baltimore Business Shows Summer Gain

BALTIMORE, Aug. 22—Records kept by the Baltimore Automobile Trade Association, Inc., show that marked gains have been made in new car deliveries during the summer as compared with the corresponding period of last year. In the first 10 days of August the increase was more than 40 per cent. Twenty-three makes during the last month showed increases and only seven showed decreases and these were slight. Several others were the same as they were last year.

Pierce-Arrow Names New Officers and Directors

BUFFALO, Aug. 24—Officers of the new Pierce-Arrow Motor Car Co., as affiliated with Studebaker Corp. of America, are A. R. Erskine, chairman of the board; M. E. Forbes, president; A. J. Chanter, first vice-president and general manager; B. H. Warner, vice-president in charge of manufacturing; E. C. Pearson, secretary, and S. O. Fellows, treasurer. Directors are Mr. Erskine, F. S. Fish, Harold Vance, Mr. Forbes, George F. Rand, Mr. Chanter, John C. Jay, F. W. Longfellow and Lester Watson.

Goodrich Names Kelly

AKRON, Aug. 23—P. J. Kelly has been appointed advertising manager of the B. F. Goodrich Co., succeeding Gates Ferguson, resigned. Mr. Kelly was formerly advertising manager of Mason Tire & Rubber Co., and recently was assistant manager of Goodrich.

New De Soto Cars Priced

DETROIT, Aug. 23—Prices on the two de luxe body models of the De Soto will be $885 for the coupe and $955 for the sedan. Equipment includes disk or wire wheels with fender wells, trunk, clock, cigar lighter.

Wells Leaves Metal Specialties

CHICAGO, Aug. 21—C. A. Wells, for the past several years sales manager of Metal Specialties Mfg. Co., this city, has resigned.

M. & A.M.A. Foresees September Activity

Increases in July Over 1927 Seen Continuing in Coming Months

NEW YORK, Aug. 23—The automotive parts and accessory industry had another record month in July. Sales which have been running ahead of the corresponding months for previous years since March, not only exceeded previous July aggregates, but rose slightly above the June levels. The Motor & Accessory Manufacturers Association, reporting on the July business of its members, estimates that August and September also, on the basis of present indications, will be busier than in previous years.

While seasonably high car and truck production schedules were largely responsible for the large July volume in parts and accessories, the industry also had a busy month in service parts and accessories sold through the wholesale and retail trade, according to the association. The only division of the business to show a decided falling off in July was that in garage machinery.

A large number of members of the M. & A. M. A. reporting for the monthly business bulletin, which has just been sent to members, had an aggregate July volume of shipments on a dollar basis 187 per cent of January, 1925, the base index used in the compilations. This compared with 185 per cent in June and 143 per cent in July last year.

Original equipment manufacturers had a phenomenal business, their aggregate volume reaching an index figure of 203 as compared with 200 in June and 148 in July last year. Service parts makers selling through the wholesale trade had a July index of 148 as compared with 150 in June and 142 in July last year. Accessory sales through the trade had a July index of 112 as compared with 110 in June and 97 in July last year. The garage machinery and tool business dropped in July to 120 from 140 in June. Last year's July index was 136.

Continued high production rates in the motor vehicle factories, particularly those of Ford and several other manufacturers which have recently introduced new models, and the generally prosperous condition of the country have given the parts and accessory industry an unusually busy summer and give promise of a continued high rate of activity throughout the fall.

Nash Sales in August Exceed Plant Capacity

KENOSHA, Aug. 23—While August opened for Nash Motors Co. with the greatest demand ever recorded by the sales department, additional orders received during the month have placed the total number received in excess of 33,000, the largest demand for cars, for one month, in the history of the company. Production facilities have been increased and, even though the plants are producing more cars than ever before, the greatest possible production for this month cannot reach more than 21,000 or 22,000 cars.

While the Kenosha and Milwaukee plants are running at capacity and establishing new high levels of production, the Racine factory, which manufactures the standard six series, reached the largest production for a single day in its history on Aug. 16 when 485 cars were produced. Since the cars were announced two months ago 42,378 have been shipped to the dealer organization.

Commenting upon the success of the new "400" series, E. H. McCarty, director of sales, said "the steadily growing demand for the new series cars makes us feel that we are going to continue at this record business peak for some time to come."

Plans for September call for still further increases in production.

Sales in New York Show July Increase

NEW YORK, Aug. 22—Retail sales of new cars in the metropolitan district of New York in July totaled 17,100, according to report by Sherlock & Arnold, a sharp increase from the 14,044 total set up in July, 1927, and from the 13,851 total in June this year. Total sales for the first seven months this year are increased to 94,672 as compared with 76,427 in the same period last year.

Chevrolet registrations in July totaled 3450 against 3329 in June. Ford increased to 788 in July from 606 in June. Nash sales increased to 1552 from the June total of 630. Buick sales in July were 1381 as against 1118 and Chrysler sales 1066 against 978.

July sales in New Jersey totaled 9819 against 9146 in July last year. Total sales for the first seven months were 69,591 against 65,847 in the same period last year.

AC Names British Manager

FLINT, Aug. 21—Norman F. Stockbridge has been appointed managing director of the AC Sphinx Spark Plug Co., Birmingham, Eng. Mr. Stockbridge formerly was assistant general manager of the Associated British Machine Tool Makers, Ltd., of London.

Mr. Stockbridge left Flint several weeks ago for his new post accompanied by Taine G. McDougal, vice-president of the AC Spark Plug Co., in charge of the AC plants in England and France.

Chrysler to Sell 30,000 Shares

NEW YORK, Aug. 23—Chrysler Corp. has arranged to sell 30,000 of its no par common shares to furnish additional working capital. Application to list the additional stock has been approved by the New York Stock Exchange. The price will be not less than $57.50 a share.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, Aug. 23—Sales of summer goods have been most satisfactory, and stocks in these lines are considerably depleted. There has been an increase in orders for fall business; and the employment situation, as a result, is substantially relieved in the industries benefited.

POWER CONSUMPTION

According to a statement issued by the "Electrical World," consumption of electrical current by 3000 leading manufacturing plants in July was higher than in June, 1928, and in July, 1927. In fact, after correction is made for seasonal influence, consumption of electrical current by these 3000 plants in July reached a new high for all time.

COTTON OPERATIONS

Cotton consumed in July amounted to 438,743 bales of lint and 62,921 bales of linters, as compared to 569,765 bales of lint and 69,872 bales of linters in July, 1927, and 510,565 bales of lint and 63,587 bales of linters in June, 1928. There is, then, a decline in July of 72,488 bales of lint and linters combined as compared to June consumption.

FREIGHT CAR LOADINGS

There was an increase of 14,646 cars loaded for the week ended Aug. 4, as against the preceding week. The total was also 24,584 cars above that for the corresponding week in 1927.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the past week was 100.1, a new high for the year. The previous high for the year was reached in the week ended July 21, when the index number was 99.9.

BANK DEBITS

Bank debits to individual accounts outside of New York City were 2 per cent higher for the week ended Aug. 15 than they were in the corresponding week last year.

FEDERAL RESERVE REPORT

The activity of interior banks and corporations in the New York money market is emphasized by the decrease in brokers' loans by New York City banks for their own account of $77,050,000 during the week ended Aug. 15, while total brokers' loans increased $50,654,000 for this same period. The Federal Reserve banks' statement of Aug. 15 showed decreases of $1,500,000 in holdings of government securities, $58,800,000 in holdings of discounted bills, and an increase of $28,100,000 in bills bought in the open market. The New York Bank was responsible for $54,000,000 of this decrease in the holdings of discounted bills.

G.M. Exports Rise to 137,470 in Half

Total Sets New Record for Six Months and Exceeds 1926 Year

NEW YORK, Aug. 20 — General Motors Corp. sold 137,470 cars to the overseas market during the first half of 1928, according to announcement by Alfred P. Sloan, Jr., president. This compares with 92,452 for the first half of 1927, or an increase of 48.7 per cent, and represents a record half-year for overseas sales.

The best previous record was in the last half of 1927, when 101,378 cars were sold and this new record exceeds the entire overseas sales for the year 1926, which amounted to 118,791.

The number of cars sold to overseas dealers is shown by quarters in the following tabulation:

Number of Cars and Trucks Sold			
Quarter	1928	1927	1926
1st	56,937	39,443	31,936
2nd	80,533	53,009	31,861
3rd	....	48,885	22,799
4th	....	52,493	32,195
		193,830	118,791

Rosengart to Produce Light Car This Year

PARIS, Aug. 3 (*by mail*)—Capitalized at 10,000,000 francs, the Lucien Rosengart Automobile Co. was registered under French laws this week, with power to increase the capital to 50,000,000 francs. The main business of this company is the production and sale of the Rosengart three-seater light car, built to the same designs as the English Austin. Rosengart states that he will be in production before the end of this year and that his automobile will be marketed at 15,000 francs ($600).

The directors are Sir Herbert Austin, of Birmingham, England; Lucien Rosengart, Henri Bancel, and the Chenard & Walcker Automobile Co. The commercial organization of the Chenard & Walcker Co. will be used for marketing the new car. Lucien Rosengart, the prime mover in this business, was at one time associated with Citroen and until the end of last year was managing director of the Peugeot company. Engineer Salomon, who designed the first Citroen car, is technical head of the Rosengart company.

New Chevrolet Plant at Top

ATLANTA, Aug. 20—The new plant of Chevrolet Motor Co. here, recently completed at a cost of about $2,500,000, is now in full production, running on an almost capacity basis of 350 Chevrolet cars daily, all of which are being sold in the Southeast. The Fisher body unit of the new plant also is running on an almost capacity basis.

Ship-to-Shore Plane Saves Day on Mail

NEW YORK, Aug. 18—Successful ship-to-shore mail service resulting in the saving of time amounting to almost a business day was demonstrated yesterday when an airplane was catapulted from the deck of the French liner Ile de France 500 miles out at sea and arrived in New York about three hours later. Although this particular flight actually resulted in no saving of time in mail delivery, due to an oversight of certain customs technicalities, officials of the French line look upon it as the forerunner of an active service. In addition to mail, the plane has a capacity for six persons.

Build Commercial Bodies for Motorcycle Side-Cars

SPRINGFIELD, MASS., Aug. 20—Manufacture of a special heavy-duty motorcycle side-car for the use of a large New York concern producing an ice cream specialty has been undertaken by the Springfield Upholstery & Metal Works. Experiments aim at delivery of much heavier loads than have been transported hitherto by this means, thus widening the utility of the motorcycle in the commercial field.

The cars are of refrigerator type, being lined with 2-in. cork overlaid with galvanized metal. The product will be packed in dry ice, and a separate enclosure is provided for taking out additional ice for the use of customers. Cars will be built with a body weight of 250 lb. built to carry a 300-lb. load. Others of larger size will be built for experimental use, in the endeavor to standardize production for deliveries in large cities throughout the country. The bodies will be mounted on an Indian chassis for testing.

Ford Changes Territory

PROVIDENCE, Aug. 18—One reason for the visit of Henry Ford to Providence, Thursday, has come to light with the announcement of Dutee Flint that hereafter all the Ford interests in Connecticut will be handled from the branch at Somerville, Mass., instead of from New York. This extends all the New England interests to the western part of its confines. It will do away with the maintenance of a clerical and administrative force at Providence. Mr. Flint is one of Mr. Ford's closest friends here.

Buys Oil-Electric Locomotive

NEW YORK, Aug. 20—The Illinois Central Railroad Co. has purchased one 600 hp. oil-electric locomotive from the Ingersoll-Rand Co. and the General Eectric Co.

Wide Gains Abroad Noted by Mooney

European Recovery Aiding South America—India Plant to Serve 348,850,000

NEW YORK, Aug. 25—Economic conditions throughout the world generally are sounder than they have been at any time since the war, according to J. D. Mooney, vice-president of General Motors Corp., in charge of overseas operations, who sailed today on the S. S. "Leviathan" for Europe.

"In Europe the improvement even since the first of the year has been marked," he said. "Industry is on the upgrade; unemployment is decreasing, the buying power of the people is increasing. In South America conditions are excellent, each country having experienced a degree of prosperity beyond anything in recent years. The increased purchasing power of Europe has reacted beneficially to conditions in this agricultural region. In the order of soundness of basic conditions come Uruguay, Argentina and Brazil.

"Conditions in the Far East are sound. Japan is slowly emerging from a financial crisis; the improved factional situation in China reflects throughout the Far East; the future of the Dutch East Indies and Malaya is bound up in the rubber situation. The outlook is distinctly promising.

New Zealand Makes Recovery

"New Zealand has recovered completely from the recent economic depression and prospects are very favorable for the balance of this year. In Australia conditions are good, although the recovery has not been as rapid as in New Zealand. South Africa, following an unprecedented rainfall, is prosperous beyond previous experience."

"General Motors India, Limited, will serve a territory approximately the size of the United States, comprising British India, Ceylon, Afghanistan and Eastern Persia. The aggregate population of these countries is 348,850,000—one-fifth of the world's total. Within the area are more than forty cities having a population of more than 100,000. Bombay and Calcutta each has more than a million inhabitants."

In response to questions as to the extent of the recent growth of General Motors volume overseas, Mr. Mooney revealed that the business done outside of the United States and Canada during the first seven months of 1928 had totaled 169,675 car and truck units, as compared to 127,814 units during the first seven months of 1927—a percentage gain of 33 per cent and a unit gain of 41,861.

Mr. Mooney will be in Paris and London during the two automobile shows of those cities. The export division, he said, will exhibit at both shows a complete line of General Motors cars.

High Pressure Tires Show Reduced Stocks

Reductions Cut General Inventories But Balloon Tires and Tubes Gain

NEW YORK, Aug. 21—Increased shipments of all type pneumatic tires and inner tubes during June lowered inventories considerably both as compared with June of last year and May this year, according to statistics by the Rubber Association of America. Balloon inventories, however, were higher.

Production during June was in excess of that in June a year ago but somewhat lower than May this year. Some exceptions to this statement are to be noted in high pressure casings and tubes but they are not sufficient to offset the tendency noted in balloon casings and tubes.

Comparison of the following figures shows the tendency during June to increased shipments as compared with May of this year and with June of last year:

	Inven.	Prod.	Ship.
Balloon Casings			
June 1928	5,587,566	3,658,508	3,486,748
May 1928	5,419,093	3,658,349	3,235,236
June 1927	4,467,148	2,744,363	2,374,345
Balloon Inner Tubes			
June 1928	7,311,204	3,553,191	3,184,056
May 1928	7,055,801	3,695,296	3,011,432
June 1927	6,256,281	2,794,164	2,328,152
High Pressure Cord Casings			
June 1928	3,362,861	1,345,857	1,812,907
May 1928	4,152,775	1,404,097	1,570,710
June 1927	4,407,054	1,884,149	2,202,930
High Pressure Inner Tubes			
June 1928	5,558,455	1,661,897	2,168,337
May 1928	6,220,912	1,680,621	1,713,411
June 1927	7,137,616	1,935,666	2,796,094

Two More Dirigible Bids

WASHINGTON, Aug. 23—Two additional bids on the proposal to construct two new Navy dirigibles of about 6,500,000 cu. ft. capacity have been received by the Navy Department, making a total of 11. The new bids are from Herman Kubler of Lackawaxen, Pa., and the Slate Aircraft Corp., Glendale, Cal. They have not yet been opened. The department's invitation for bids specified no proposals postmarked after noon, Aug. 9, would be received but all postmarked before that time would be accepted. The new bids met the time specification.

Driggs Plans Larger Plane

LANSING, Aug. 18—The Driggs Aircraft Corp. contemplates producing a larger and heavier plane in addition to the present Driggs' Dart. A new type four-cylinder 60 hp. air-cooled engine, experiments on which are now being carried on at the plant of the Machine Screw Co. in Lansing, will probably utilize the larger ship. The engines would be produced by the Machine Screw Co.

$7,500,000 Merger of Motor Stage Companies Unites 150 Operators in New Central System

SAN FRANCISCO, Aug. 20—Announcement of the completion of the merger of approximately 150 individual motor stage operators into the Yelloway-Pioneer System, Inc., a $7,500,000 corporation, has been made by W. E. Travis, head of the merger, and also president of the California Transit Co., which serves as the nucleus of the new organization. Technically, according to Mr. Travis, who has just returned to the coast, the merger will be the American Motor Transportation Co., but the transcontinental system and the branch lines will be known collectively under the name of the Yelloway-Pioneer System, Inc.

"In general," Mr. Travis said, in his headquarters in Oakland, Calif., "the amalgamation includes all companies and individuals operating under the former Yelloway franchises throughout the East and Middle West, and the California Transit Co. of the West. The corporation is preparing to inaugurate in September new routes extending from New York to Boston, Washington and Baltimore; from Indianapolis, via Fort Wayne, to Detroit; from Chicago, via Fort Wayne, to Pittsburgh, and from Pittsburgh to Cleveland.

"With the completion of these new extensions, the system will operate over approximately 70,000 miles daily. Headquarters for the entire system will be in Oakland, Calif., and branch offices are to be opened in Chicago to direct operations in the Middle West and East. Joint tariff agreements have been completed with feeder lines operating off the trunk routes, so that it will be possible for the Yelloway-Pioneer System, Inc., to issue tickets from any of its stations to virtually any point in the United States.

"With depots established along all routes and with perfected through-ticket arrangements, passengers can obtain stop-over privileges at the principal stations, and resume travel within a maximum time of 12 hours, even at the smallest towns on the system. The whole transcontinental system of stages will operate under the jurisdictions of the various states, or under that of the Interstate Commerce Commission, according to the extent of the service rendered.

"Operating subsidiaries are the California Transit Co. on the Pacific Coast; Pioneer Southwestern Stages, Inc., from Los Angeles to Denver; and Pioneer Stages, east of Denver. Seat of operations in New York City will be the Capitol Theater Bus Terminal.

"The long-distance barrier between the coasts is being cut down rapidly and transportation history is being written in this year of 1928 in letters that will not be soon forgotten. Now, the largest transcontinental bus transportation systems in the world are combining to facilitate the movement of the cross-country traveler, with regular schedules, fast time and new perfections in cars which permit hitherto unknown conveniences and comforts."

Spanish Industry to Get Aid from License Funds

WASHINGTON, Aug. 23—The Spanish government has decided to create a special fund for the assistance of its automobile industry, according to advices to the Department of Commerce from Madrid.

The fund, which will run into millions of pesetas, in the main will come from a direct loan by the state, license taxes and commissions levied by the official commission of motors and automobiles on sales of motor vehicles. It will be expended by advances for purchases of material by companies holding government contracts or orders and in investigations, studies and analyses for the direct aid of the Spanish automotive industry.

Marmon Stages Driveaway

CHICAGO, Aug. 18—Urgent demand for the new series Marmon 68 and 78 cars by dealers in the Chicago territory led to the largest driveaway on Aug. 9 the company has staged.

U. S. Rubber Net Income $63,391 in First Half

NEW YORK, Aug. 21—Net income of United States Rubber Co. for the first half of 1928 totaled $63,391 after interest charges and depreciation. Net income from operations totaled $4,338,702 and income from the United States Rubber Plantations, Inc., totaled $1,000,000. Interest on funded debt totaled $3,061,539 and depreciation of plants $2,213,772. Annual preferred dividend requirements are $5,208,000 exclusive of preferred shares held by subsidiaries.

For the full year 1927 the company earned $1.27 a share on 810,000 shares of common stock. Net working capital as of June 30, 1928, was $80,444,395 as against $98,885,406 on Dec. 31, 1927. Inventories of rubber goods and crude rubber stocks were written off 20 cents a pound, a total write-off of $14,147,659.

Durant Adds Cabriolet

NEW YORK, Aug. 21—Durant Motors, Inc., has added a collapsible cabriolet to its series 55, priced at $895. Upholstery is in black pebble grain leather and the body finish is in tan combinations. The top is fully collapsible.

Men of the Industry and What They Are Doing

Willys Back from Europe Sees Active Four Months

John N. Willys, president of Willys-Overland, returning from Europe, reported the Willys-Overland Crosley Co. busy on the largest schedule of deliveries in its history and that the assembly plant which was opened at Berlin about a year ago is now running at maximum capacity.

"England has entered upon an elaborate good roads program, and the English engineers are following the methods of construction which have been adopted by engineers in this country," he said. "There is now an excellent highway from London to Liverpool and the traffic over this road greatly resembles that on the larger arteries in the United States."

Mr. Willys said indications were that the next four months will show as large gains over the corresponding months last year as the early months of the year did.

Warfield Joins Manhattan

Manhattan Rubber Mfg. Co. of Passaic, N. J., has added to its organization E. E. Warfield, well known in the automotive replacement field, in connection with the company's merchandising of its Hycoe line. Mr. Warfield is widely known throughout the automotive industry, having been continually connected with it since 1908. He was for three years sales manager for Wetmore-Savage Co., and for four years vice-president in charge of sales for the Gill Mfg. Co. For the past two years, he has been director of sales and advertising for the Protex-A-Motor Mfg. Co.

G-M Export Men on Trips

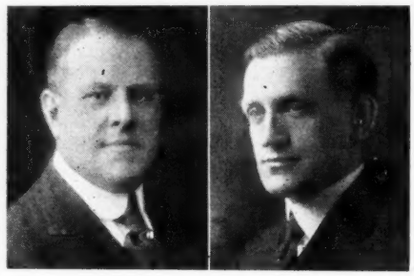
W. D. Sullivan, managing director of General Motors Export Co., sailed Aug. 25 to Cuba, Mexico and Jamaica. He will be gone approximately six weeks. Harold Drew of the manufacturing department of Vauxhall Motors, Ltd., returned to his post at Luton, England, after a short visit to the New York office. E. O. Crawford, formerly of the Fisher Body Corp., is going to Sao Paulo to join General Motors Brazil.

Hurley Named Assistant

The Moto Meter Company, Inc., has appointed Roy T. Hurley assistant to President George H. Townsend, in charge of production and engineering. Mr. Hurley was formerly chief ignition specialist of the company in charge of spark plug manufacture.

Ervin Leaves Moto Meter

Henry Ervin, sales manager of the Moto Meter Co., Inc., Long Island City, has resigned. His successor has not been appointed as yet.



L. J. Eastman H. W. Peters

New vice-presidents of Packard Motor Car Co., Mr. Peters succeeding Dr. H. H. Hills as vice-president in charge of distribution at the factory, and Mr. Eastman becoming a vice-president of the manufacturing company while continuing president of the Packard branch in New York. Mr. Peters formerly was president of the Packard Chicago branch

Macauley Goes Abroad

Alvan Macauley, president Packard Motor Car Co., and B. C. Budd, vice-president of Packard Export Corp., have sailed for Europe to participate in the introduction of the new series Packard abroad and to attend the convention of European Packard dealers in Paris in September.

Johnson Succeeds Cartwright

George A. Johnson, former manager of the New York branch of North East Service, Inc., has been appointed service manager succeeding D. P. Cartwright. Mr. Johnson will be located at the home office at Rochester, N. Y., and will assume his new duties at once. Mr. Cartwright has been assigned to special work.

Moon Joins Lupton

Clarence Moon, formerly with the parts and service department of the Willys-Overland Co., has joined the sales and engineering department of David Lupton's Sons Co. Part of Mr. Moon's work will be the laying out of efficient storage parts departments.

Wagner Transfers Johnson

Fred Johnson, of the Wagner Electric Co., has been transferred from the St. Louis sales office to the managership of the Los Angeles branch. He was manager of the St. Louis office for the last 21 years.

Moon Appoints McCarthy

G. E. McCarthy has been appointed zone sales manager by Moon Motor Car Co. in Tennessee, Alabama, Mississippi, Arkansas, and west Kentucky.

Butcher Back From England

Harold E. Butcher, newly appointed vice-president of the Edward G. Budd Mfg. Co., builders of all-steel bodies, has just returned from England.

Kinkade, Engine Expert, Joins Lycoming Company

T. H. Kinkade, recognized as one of the world's leading airplane engine experts, has become affiliated with the Lycoming Mfg. Co., and will assume his duties at once. He was formerly with the Wright Aeronautical Corp.

Mr. Kinkade's record with air-cooled engines was first heard of nationally through his work as engine instructor on aircraft power plants in the United States Army and Navy training stations. Practically all the engines of the successful planes used in the trans-Atlantic flights last year were made ready by Mr. Kinkade. The Bellanca plane, the "Columbia" of Chamberlin and Levine, the Fokker of Commander Byrd, the Stinson plane of Ruth Elder and George Haldeman, were all tuned up by him before their flights.

Bray on European Trip

John W. Bray, sales manager of the Bullard Machine Tool Co., Bridgeport, Conn., is abroad with Mrs. Bray for an extended business and vacation trip. Mr. Bray will attend the Olympia Machine Tool Exhibit in London in September where several Bullard tools will be on display, and will also visit business centers in Norway, Sweden, Germany, Belgium, Switzerland, and Czechoslovakia.

Prof. Schweitzer Goes Abroad

P. H. Schweitzer, associate professor of engineering research at Pennsylvania State College, is going abroad to take his doctor's degree at a German university. Before returning he will meet and confer with the leading builders of Diesel engines in Europe. Professor Schweitzer is in charge of Diesel oil spray research at Penn State. K. J. DeJuhasz will substitute.

Macbeth Concludes Contract

Colin Macbeth, of Birmingham, England, consulting engineer on rubber manufacturing, has concluded his contract with the Dunlop Rubber Co. for exclusive rights to his services in the tire field, and is now available to tire manufacturers on both sides of the Atlantic.

Peterson Joins Bundy

H. C. Peterson has joined the Bundy Tubing Co., Detroit, as engineer. Mr. Peterson comes to the Bundy company from the Underwriters Laboratories, Chicago, where he was engineer of the automotive department.

Randles Back From Europe

G. E. Randles, president of the Foote-Burt Co., has just returned from a two month trip to Europe.

Austin Prices Down; Morris to Increase

Prominent British Makers Take Opposite Positions—Austin Adds Models

LONDON, Aug. 13 (*by mail*)—Within a day or two of an inspired announcement to the effect that the prices of Morris cars will be increased at the end of this month and for 1929, Austin Motor Co. issues today a list of "revised" prices, the latter representing reductions in all models of both chassis type and body style. Four additional body styles are included in the range now specified as standard.

The following are the New Austin prices, effective from this date:

	New	Old
Seven Hp. Four-Cylinder		
Chassis	£92	£99
Touring car	£125	£135
Sedan	£135	£150
Fabric sedan	£135	£150
12 Hp. Four-Cylinder		
Chassis	£185	£195
Clifton tourer	£245	£255
Open road tourer	£265	£295
Fabric sedan (6-window)	£315	£325
Fabric sedan (4-window)	£305	£325
Burnham sedan	£315	£325
16 Hp. "Light Six"		
Chassis	£235	£255
Clifton tourer	£295	...
Open road touring	£315	£355
Fabric sedan (6-window)	£365	£395
Fabric sedan (4-window)	£355	...
Burnham sedan	£365	£395
20 Hp. Four-Cylinder		
Chassis	£295	£325
Open road tourer (5-7-seater)	£395	£425
Marlborough landaulet	£455	£475
Carlton sedan	£455	£495
Ranelagh sedan	£525	£575
Fabric sedan	£525	...
20 Hp. Six-Cylinder		
Chassis	£395	£425
Open road tourer (5-7-seater)	£495	£525
Marlborough landaulet	...	...
Carlton sedan	£525	£595
Ranelagh sedan	£595	£675
Fabric sedan	£595	...

Chemical Society Plans Carbon Monoxide Study

NEW YORK, Aug. 20—Study of atmospheric pollution by automobile exhaust gases is to be undertaken by a joint committee organized under the direction of Prof. Alexander Silverman of the University of Pittsburgh, representing the American Chemical Society. This committee will furnish authentic information concerning the danger or lack of danger resulting from such pollution and will encourage research and investigation toward the reduction of the amount of carbon monoxide formed in automobile operation and attempt to eliminate this entirely if possible.

Other members of this committee and the organizations which they represent are: H. C. Dickinson, American Automobile Association; Dr. Paul N. Leech, American Medical Association; R. P. Anderson, American Petroleum Institute; Dr. George A. Soper, American Public Health Association; T. D. Pratt, Motor Truck Association of America; Walter E. Laird, National Association of Taxicabs; Dr. Leonard Greenberg, National Safety Council; T. A. Boyd, Society of Automotive Engineers; W. P. Yant, U. S. Bureau of Mines; Dr. Leonard Greenberg, U. S. Public Health Service.

$1,500,000 Expansion Outlined by Olds

DETROIT, Aug. 20—Plans for further plant expansion to involve expenditures of from $1,000,000 to $1,500,000 were announced Saturday by I. J. Reuter, president of Olds Motor Works. The new buildings will house the tool design department and will furnish additions to the enameling plant, the present sheet metal plant, and the new heat-treating plant recently completed.

The new buildings and their equipment are estimated to more than double the production capacity of these several departments, which have been working at capacity since January. With the completion of the four new buildings Olds will have a total floor area of 1,887,242 sq. ft.

Olds operations in the first six months of the year were at highest levels in recent years, production exceeding 60,000 in the first seven months.

Bearings Company Adds 50% to Plant Capacity

LANCASTER, PA., Aug. 21—Improvements and additions to the main plant and the Sterling plant of the Bearings Co. of America now complete will increase capacity 50 per cent. The additions have been made necessary, the company reports, to take care of constantly increasing demand for its products from automotive buyers. Equipment is now being installed and the new plants will be in full operation within a short time.

The company reports operation in all its plants are at high rate. Working forces are being increased steadily and with the new plants will be greatly expanded.

Chandler-Cleveland Net $61,060 in First 6 Months

CLEVELAND, Aug. 21—Chandler-Cleveland Motors Corp. reports for the quarter ended June 30, 1928, net profit of $8,794. This compares with $52,266 in the preceding quarter, and with $411,603 after allowing for the dividend requirements on preference stock, in the second quarter of 1927.

For the six months' period net profit was $61,060, equal to 17 cents a share on preference stock, against $312,378, or 89 cents a share on preference stock in the first half of the preceding year. Third-quarter shipments of the company are expected to exceed the total of the first half.

Financial Notes

Henney Motor Co. stockholders have approved an increase in the company's capitalization from 100,000 shares of common stock to 125,000 shares and from 25,000 shares of preferred stock to 50,000 shares of preferred. Stockholders also approved the issuance of additional stock to provide for the acquisition of the Weatherproof Body Corp. The company will issue 8000 shares of $4 dividend preferred stock and 20,200 shares of common stock. Holders of both common and preferred stock will be given the right to subscribe for one share of new common stock at $18 per share for each six shares of common or preferred stock now held. Rights will be issued to stockholders of record at the close of business Aug. 24. The rights must be exercised and subscriptions paid before the close of business Sept. 15.

Fisk Rubber Co. and subsidiaries report a net loss of $4,983,134 for the first six months of 1928. This loss is due primarily to write down of crude rubber inventories and crude rubber in finished goods and work in process in market valuation as of June 30. This loss contrasts with a net profit of $1,717,307 for the eight months ended June 30, 1927, which was equal after dividend on converted stock to 88 cents a share on outstanding common stock. The company also established out of the profit and loss surplus a reserve of $3,500,000 to absorb the anticipated loss from participation in the rubber pool.

Bendix Corp. stockholders will meet Sept. 6 to vote on issuance of 450,000 shares of common stock of $5 par in exchange for 225,000 shares of $10 par on basis of two for one, also elimination of 65,000 shares of Class A stock. This will leave the company with one class of stock. The directors have indicated their intention of placing the new stock on a dividend basis of at least $2 a share, equivalent to $4 on present Class B stock.

Electric Auto-Lite Co. and subsidiaries, including the USL Battery Corp., report net profit for the six months ended June 30 of $3,693,585 before taxes. This compares with $1,819,905 for the first half of last year. The profit for the second quarter was $2,492,072 as compared with $1,043,956, for the second quarter of last year.

Galesburg Coulter-Disc Co. reports sales of over $500,000 for July, 1928, the largest single month's business in the history of the company and an increase of 91 per cent over the corresponding month in 1927. Unfilled orders on hand are sufficient to keep plants operating at capacity for 90 days.

Colonial Air Transport, Inc., reports net loss for the six months ended June 30 as $18,345. Operations for the month of June showed a profit of $866, being the first month since its organization in which the company has emerged from red ink.

Murray Corp. of America reports net profit of $643,491 for the half year, equal after preferred dividends of J. W. Murray Mfg. Co. to $2.35 a share on the common. Profit of $571,041 was reported for the first half of 1927.

Commercial Credit to Buy Export Firm

Will Acquire Kemsley, Milburn to Extend Operations in Foreign Field

BALTIMORE, Aug. 20—Stockholders of Commercial Credit Co. will vote Aug. 30 on a proposal to acquire control of Kemsley, Milburn & Co., Ltd., a New York corporation engaged primarily in exporting automobiles.

In his letter to stockholders, W. H. Grimes, president, said Commercial Credit has been owner of 40,000 shares of the 270,000 shares outstanding of the Kemsley company. Control is now sought to enlarge the scope of the foreign business of Commercial Credit, to cement friendships with automobile manufacturers and to avoid the expense of setting up an independent foreign department for these purposes.

One share of the common stock of Commercial Credit will be offered for two shares of the Kemsley company stock in the event that a controlling interest cannot be purchased at a price satisfactory to the executive committee.

Hoepli Heads Swiss Company

NEW YORK, Aug. 21—The Swiss International Credit Corp. has been formed as an affiliated company of the First Federal Foreign Investment Trust, this city, to finance automotive sales in Europe. Company headquarters are in Zurich, Switzerland, but its operations will be extended throughout Europe with subsidiary companies being formed in other countries as business warrants.

M. H. Hoepli is president and managing director of the new company and the board will include a prominent Swiss banker as well as several Wall Street financiers and international bankers. Mr. Hoepli was at one time head of the automotive division of the Department of Commerce and for several years has been directing European distribution for a number of American manufacturers.

The new corporation will be formally introduced to the European trade at the Paris show.

Paint Companies Merge

CLEVELAND, Aug. 20—The Ferbert Schorndorfer Co., manufacturer of the Desco line of paints, has absorbed the Lankin Vivian Co. The company has expanded its original capacity 500 per cent in the seven years since organization. The company has awarded contract for a new administration building to the Austin Co.

Ramsey Equips Plant

ST. LOUIS, Aug. 20—Ramsey Accessories Mfg. Co. is installing machinery in a new building costing $160,000. This new plant will house the present plants in St. Louis and Holland, Mich.

Air Mail Carries 350,000 Reo Letters

DETROIT, Aug. 21—What is probably the largest single air mail shipment ever made in the world left the factory of the Reo Motor Car Co. at Lansing today. The actual weight of the 350,000 letters which form a part of a direct mail campaign, was 18,750 lb. and postage cost $15,000. It was carried by 18 Stinson-Detroiter planes of the Thompson Aeronautical Corp., which operates a feeder air mail service in Michigan. The assemblage of 18 planes in Lansing for a commercial shipment will probably also be the largest affair of its kind in the history of air mail.

Graham-Paige at Peak Builds 516 for Day Mark

DETROIT, Aug. 18—Graham-Paige Motors Corp. set a new record for one day's production on Aug. 14, when 516 cars were built in the regular nine-hour working day. Production is being maintained at its maximum to supply a demand that shows no sign of the seasonal decrease usually felt in the industry following the spring buying peak. On the contrary, retail sales gained constantly throughout July, and the week ending Aug. 4 exceeded the best previous record by 220 car sales.

Rogers Gets Graham-Paige

CLEVELAND, Aug. 18—The Scott A. Rogers Co. has acquired ownership of the Graham-Paige Co. of Ohio, to continue as distributors of Graham-Paige for the Cleveland territory, comprising 24 counties. Scott A. Rogers, president, was formerly vice-president of the Walter F. Wright Co., Chrysler distributor here. Associated with him in his new company are E. D. Rogers, president of the Morse-Rogers Steel Co., as vice-president; J. A. Ferguson, formerly general sales manager of the Graham-Paige Co., of Ohio, as secretary, and C. A. Wells, former auditor, as treasurer. W. A. Hall, formerly general manager of the Cleveland branch of the Graham-Paige Motors Corp., joins the factory official staff at Detroit.

To Extend Piston Plant

MILWAUKEE, Aug. 20—Wisconsin Machinery & Mfg. Co., manufacturer of semi-steel and aluminum and invar-steel strut pistons, has let contracts for an addition to the present plant. The company reports an increase of sales volume of 30 per cent compared with the first seven months of 1927 and orders indicate continued gains through the year.

Canadian Exports Fall 24.1% in Half

Parts Shipments Show Largest Decline With Reduction of 62 Per Cent

WASHINGTON, Aug. 23—Canadian exports of motor vehicles declined 24.1 per cent in value and 26.4 per cent in volume during the first six months of the current year as compared with the first six months of 1927, the Department of Commerce announces.

In 1927, from January to the end of June, Canada shipped 36,085 passenger cars and trucks valued at $16,531,451. This year during the same period the number of units shipped declined to 26,552 valued at $12,544,269. Passenger car shipments in the 1928 period numbered 18,691 units valued at $9,709,847 while in 1927, during the first half year, these shipments totaled 25,325 units valued at $12,901,983.

Parts of automobiles as Canadian exports, however, suffered the severest decline of any group of automotive exports during the first half of 1928, being valued at $824,917, as compared with a valuation of $2,173,172 in the 1927 period. This was a 62 per cent drop from the last year period.

Total automotive products exports of Canada in June were valued at $2,302,338, a decrease of 12.8 per cent as compared with May of 1928, but showing a slight gain, amounting to less than 1 per cent over June, 1927.

Langdon with Ball Crank

CINCINNATI, Aug. 20—Cincinnati Ball Crank Co. is opening a Detroit office Sept. 1. W. G. Langdon, formerly sales manager of the Midland Steel Products Co., has been appointed director of sales of the automotive parts division. R. H. Wallace, formerly with Midland Steel Products Co., is now director of manufacturing and engineering for this company.

Hayes Gets Chrysler Order

DETROIT, Aug. 20—A contract for bodies for the Plymouth sedan has been awarded by the Chrysler Corp. to the Hayes Body Corp. It is expected that production will begin just as soon as the new dies and jigs can be installed. This is the largest single order ever received by Hayes Body, being estimated as representing a volume of between $2,000,000 and $3,000,000 per month.

Form Plywood Institute

TACOMA, WASH., Aug. 18—The Douglas Fir Plywood Institute has been organized with offices in Tacoma. The objects of the institute include promotion of the use of fir plywood by cooperative advertising, to establish and maintain high standards of trade practices and usages.

Ohio Centers Show 10,999 Sales in July

Total Falls About Eight Per Cent from June—Cleveland Sales Steady

COLUMBUS, OHIO, Aug. 20—According to tabulations by the Ohio Council, National Automobile Dealers' Association, new car sales in seven of the larger counties of Ohio during July were 10,999 as compared with 12,170 in June of this year. The counties comprise about 80 per cent of the population of the state and are a good index of new car sales throughout the state.

Cuyahoga county, containing Cleveland, had 3998 sales in July, compared with 4402; Hamilton county, containing Cincinnati, had 1659 sales compared with 1650; Franklin county, containing Columbus, had 1267 sales compared with 1345; Lucas county, containing Toledo, had 1153 sales compared with 1435; Summit county, containing Akron, had 1246 sales compared with 1431; Montgomery county, containing Dayton, had 877 sales compared with 1054; and Stark county, containing Canton, had 799 sales compared with 853.

Ohio Employment Lower

COLUMBUS, Aug. 18—The Bureau of Business Research of Ohio State University, in an advance report of a survey of employment in the automobile and parts industries in Ohio, shows that July employment was 5 per cent lower than June, and 2 per cent lower than July, 1927. Of the 49 reporting concerns, used to make up the report, 27 showed decreases of July employment from June, 21 showed increases and one showed no change.

Greenfield Plant Busy

GREENFIELD, MASS., Aug. 22—Greenfield Tap & Die Corp. is enjoying a busy season with an increased business being done in equipment for automobile maintenance. The new No. 12 hydromatic machine for grinding insides of ball bearing races and bushings is a factor in increasing sales, and an improved business is reported in taps, dies, twist drills, reamers and gages.

Moore on Two Shifts

SPRINGFIELD, MASS., Aug. 22—Moore Drop Forging Co. is operating at capacity with two shifts daily and some departments working 24 hours a day. Forgings are chiefly for automotive products, and the volume of production for the Ford Motor Co. has steadily increased.

Formica Adds Building

CINCINNATI, Aug. 20—A new building containing 18,000 sq. ft. of floor space has been added to the plant of the Formica Insulation Co. and will be available for production in about 30 days. Advices from this company show that the automotive gear department has been on 24 hours operation, six days a week, for the past eight months, the larger part of the production being taken by Ford, Chevrolet, Reo, Nash and Lycoming. Shipments recently have been running 40 per cent ahead of 1927.

Fisk Builds 30,000 Daily

CHICOPEE FALLS, MASS., Aug. 22—Fisk Rubber Co. is producing from 29,000 to 30,000 tires daily in the Chicopee Falls and Cudahy plants, and 12,000 of these are sent out as original equipment of large car manufacturers, according to Harry G. Fisk, vice-president. Outlook for fall business is reported as excellent.

Biennial Census of Industry Shows Drop in Number of Establishments to 262

WASHINGTON, Aug. 18—The biennial census just completed by the Department of Commerce shows 3,335,805 vehicles as the aggregate output of motor vehicle manufacturers during 1927, valued at $2,537,912,192, which represents decreases of 19.9 per cent in number and 13.9 per cent in value as compared with 1925, the last preceding census year.

Figures and data were collected during 1928 by the Department of Commerce. The figures are based on wholesale factory prices.

Two hundred and sixty-two establishments reported for 1927; 44 being located in Michigan, 34 in Ohio, 25 in Illinois, 22 in California, 20 in New York, 19 in Indiana and the remainder scattered in various states. In 1925, 297 establishments reported. The net loss results from a real loss of 55 establishments and a gain of 20. Assembling plants are treated for these figures as manufacturing establishments, wherefore the number of establishments shown is larger than the actual number of manufacturers.

Figures for 1927 thus far are preliminary and subject to correction.

During 1927, 2,837,380 passenger vehicles, not including public conveyances, were manufactured at a total valuation of $2,174,718,977, while in 1925, 3,653,725 vehicles of this class valued at $2,523,804,750 were produced.

Public conveyances, including motor buses, public utility, taxicabs and similar vehicles numbering 8944 and valued at $27,836,038 were produced in 1927, while 15,275 such vehicles valued at $43,558,057 were manufactured in 1925.

A total of 452,051 commercial vehicles valued at $324,575,999 were produced in the year 1927 as against 494,622 such products valued at $368,520,698 in the year 1925.

The proportion of closed passenger cars increased to 85.5 per cent in 1927. In 1925, this type of car represented only 58.3 per cent of the total and in 1923 only 35 per cent of the total number of passenger cars. Production of open passenger vehicles showed correspondingly greater declines, being 80.7 per cent less in 1927 than in 1925 for touring cars as to quantity, and 49.3 per cent less as to quantity for 1927 in roadsters, runabouts, etc., when compared with 1925 figures. For instance, 1,095,186 touring cars valued at $516,206,235 were produced in 1925 while in 1927 only 211,278 such vehicles valued at $116,099,471 were produced. On the other hand 2,080,697 closed cars valued at $1,786,834,065 were manufactured for passengers in 1925 while in 1927 the number of such cars manufactured was 2,408,148, valued at $1,918,157,677, an increase of 15.7 per cent in quantity produced and an increase of 7.3 per cent as to value of the products.

The number of trailers manufactured in 1927 amounted to 18,893, valued at $6,690,238 as compared wtih 11,314 of these vehicles valued at $4,658,636 produced in 1925.

A tabulated summary for the industry comparing the years of 1925 and 1927 prepared by the Department of Commerce is as follows:

	1927	1925	Per Cent of Change
Number of establishments	262	297	....
Wage earners (not including salaried employees)	187,835	197,728	Down 5.0
Wages (manufacturers' profits not included)	$321,625,394	$341,210,401	Down 5.7
Cost of materials, supplies, fuel, power, etc.	$1,888,038,624	$2,109,324,851	Down 10.5

Improved Air Terminals Need Here, Says Warner

WASHINGTON, Aug. 23—Returning from a six weeks' inspection of European aeronautical activities, Edward P. Warner, assistant secretary of the navy for aeronautics, has announced that his survey has convinced him that the record of the United States in safety for military and naval aviation, though open for improvement, is not excelled by any military or naval service in any nation of the world.

He was most impressed he said with the flying terminals of Germany, England and France and declared that the United States does not possess the same facilities, advising erection of permanent buildings such as restaurants and hotels in the immediate vicinity of airports.

Employment in July Shows 1.1% Decrease

Automotive Plants Show Only Slight Drop—Inventories Reduce Payrolls

WASHINGTON, Aug. 23—Employment in the automobile industry remained comparatively steady during July as compared with June, and increased as compared with July, 1927, while a general decline in employment throughout the country was being recorded by the Bureau of Labor Statistics, according to data from more than 11,000 establishments in 54 industries just made public by the Department of Labor.

Payrolls throughout the country dropped 3.1 per cent during July, 1928, as compared with June, in the 54 industries, and employment decreased 1.1 per cent, according to the figures made public.

The Department of Labor states that in comparing July, 1928, with July, 1927, increased employment appeared in the automobile group alone of 12 key groups of industries for the third successive month. Comparing July with June, 1928, the automotive industry recorded a drop of only one-tenth of 1 per cent in employment.

The outstanding increases in employment in separate industries in the year ended July 31, 1928, showed the automobile industry far in the lead of all others with 28.3 per cent increase, with 21.3 per cent increase recorded for an allied branch, agricultural implements.

The drop in pay-rolls and employment for the industries as a whole is explained by the Department of Labor as caused by the normal closing of business for inventories, repairs and vacations at this season of the year.

Auburn Exports in July Set New Monthly Record

DETROIT, Aug. 18—Auburn shipped more cars in July of this year to export trade than in any other July in the history of the company, according to R. S. Wiley, export manager. Prospects for August are extremely bright, according to Mr. Wiley, and he predicts a new record business for Auburn this fall in the foreign field.

"Business in South American countries shows indications of reaching new levels for the spring trade," Mr. Wiley said, "and Australia is gradually pulling out of its recent slump. Every indication is that sales will move along at increased pace in that continent this fall."

Opens Minneapolis Branch

ST. LOUIS, Aug. 22—Gardner Motor Co., Inc., has established a factory branch at Minneapolis under the supervision of B. R. Kelly, who is well known in Minneapolis distributing circles.

New York Approves Elevated Highway

NEW YORK, Aug. 18—Improvement of traffic facilities advanced one step further yesterday when the board of estimate of this city approved a plan for an elevated express motor highway along the west side of Manhattan between Fifty-ninth and Seventy-second Streets. This highway will run over the Sixtieth Street yard of the New York Central Railroad and will connect with Seventy-second St. at Riverside Drive and with the motor highway which is being developed north of where the New York Central tracks are to be roofed over.

Massachusetts to Assess Higher Insurance Rate

BOSTON, Aug. 18—Rates for insurance under the Massachusetts Compulsory Insurance Law for automobiles will be increased next year. Cars now paying a rate of $29 will be increased to $53, and other cars paying $45 will be boosted to $70. In some suburban sections the rates will be dropped a few dollars.

According to Insurance Commissioner Wesley E. Monk the insurance companies have not made money under the law and it is to be changed to allow them to make a reasonable profit. The commissioner has created a new territory called 1-A, comprising Boston, Revere, Chelsea, Somerville, Cambridge, Everett and Winthrop. He claims that in this territory there have been many accidents resulting in loss to the insurance companies under existing rates.

Motorists in this territory assert that many of the accidents have been the fault of motorists from other sections touring through their district. That there will be a big uproar over the new rates is certain, because the great burden hits the small car owner. This increase is certain to revive the demand made a couple of years ago to have the state handle the insurance.

Curtiss Company to Show 2 New Engines on Coast

NEW YORK, Aug. 22—Curtiss Aeroplane & Motor Co., Inc., will exhibit two new air-cooled engines, the Challenger and the Chieftain, at the coming Los Angeles Exposition. The Challenger is expected to be of primary interest to the commercial manufacturer. It is rated at 170 hp. at 1800 r.p.m., is of the radial type, six cylinders, staggered arrangement, on a two-throw crankshaft.

The Chieftain, which develops 600 hp. at 2200 r.p.m. has 12 cylinders in two hexagonal rows of six.

Tax Refund Provides Return to Consumer

Manufacturer Must Submit Affidavits Showing Receipt by Buyer

WASHINGTON, Aug. 20—Regulations covering procedure to be observed by manufacturers, producers and importers of parts or accessories for automotive products in making claims for refund of government taxes have been promulgated by the Bureau of Internal Revenue, as Treasury Decision 4195.

Refunds will not be made of any amount paid by or collected from any manufacturer, producer or importer in respect of the tax imposed unless one of three conditions is present, the conditions being as follows: 1—That a judgment was had in respect to the refund in a court action duly begun prior to April 30, 1928; 2—That it be established to the satisfaction of the Commissioner of Internal Revenue that a tax has been paid in excess of the amount properly payable upon sale or lease of an article subject to tax and in other specific similar instances, and 3—That a bond safeguarding the government for the amount of the refund had been posted with the commissioner pending decisions on the refund.

Manufacturers and others must procure from each consumer to whom they have returned refunds of tax moneys, affidavits setting out the transaction and acknowledging receipt of the money. Such affidavits must be transmitted to the bureau.

The rules apply to taxes imposed by Subdivision 3 of Section 600 of the Revenue Act of 1925; Subdivision 3 of Section 900 of the Revenue Act of 1921, and to the Revenue Act of 1918.

It was stated by the bureau officials that it was believed that the regulations were sufficiently liberal to allow for all refunds of a legitimate character and at the same time sufficiently restrictive to prevent manufacturers or producers obtaining refunds and keeping the money rather than turning it back to the consumer.

Six months after obtaining refunds, the manufacturers or producers must deliver to the collector of internal revenue to whom the tax was paid evidence that they have paid the refunds to the taxpaying consumer or return the refund to the bureau.

The government's position is to insure refund only to the person actually taxed.

Highway Meeting Arranged

WASHINGTON, Aug. 22—The eighth annual meeting of the highway research board of the division of engineering of the National Research Council is to be held Dec. 13 and 14, 1928, at the building of the National Academy of Sciences and the National Research Council, this city.

Steel Mills Reduce Cash Discount Rate

Terms Now General Are Equivalent to Increase of 60 Cents to $1.20 a Ton

NEW YORK, Aug. 23—With announcement this week by the leading interest's sheet-rolling subsidiary that "effective on business placed for shipment after Sept. 30, 1928, cash discount will be one-half of one per cent of payment in 10 days of invoice instead of 2 per cent as heretofore," this change in customary terms of payment may be said to have become general. The first announcement of such a change came from a prominent independent rolling mill interest on Aug. 1 and since then other independents have fallen in line.

The leading interest's sheet-rolling subsidiaries accompanies its announcement with the following explanation:

"In making this change in our policy we are not unmindful of certain benefits to be derived from a high discount rate, but the condition of the sheet metal business from the manufacturers' standpoint is so unsatisfactory that a high premium for prompt payment can no longer be made. There have been heavy reductions in the selling prices of sheets, but in spite of these, there has been no change in our wage rates, or reduction in the quality of our products.

"Users of our material are obtaining better service than ever before and are no longer required to carry heavy stocks. These conditions have placed a burden upon the manufacturer which compels him to look for other legitimate means of protecting his investment, and one of the most logical methods is presented in a reduction of our cash discount from an amount which economic conditions have not warranted for many years past."

The change is equivalent to an advance of 60 cents to $1.20 per ton in prevailing base quotations. It is generally understood in the trade that other steel products, especially competitive material, such as cold-rolled strip-steel, will follow suit in the matter of discounts.

Shipments into automotive consumption on all descriptions of steel continue at a gratifying high rate. Automotive alloy steel plants are operating at a very satisfactory pace. The question uppermost in producers' mind is how much of the early September specifications will be for fourth quarter consumption. Some producers intimate that they mean it when they say they will draw the deadline on specifications received after September 10, at third quarter prices.

Pig Iron—Middle West automotive foundries have bought heavy tonnages of foundry and malleable iron, some for early shipment and a considerable tonnage for shipment over the remainder of the year. The Michigan market appears to be more nearly $18 than the $17.50 which was quoted generally until recently.

Aluminum—Statements by metal importers returning from a visit of European markets concur in the view that the recent price reduction by the European Cartel has greatly enhanced the use of aluminum in Germany where, however, magnesium alloys are coming more and more into competition with aluminum in automotive consumption, due also to successive price reductions. The domestic market situation remains entirely unaltered.

Copper—The 14¾ cents, delivered Connecticut, and 14⅞ cents, delivered Middle West, quotation, which has endured for three months now, continues in force, with consuming demand rather light.

Tin—Definite market trend is lacking. Singapore selling early this week resulted in fractional declines. Consumers buy what they need.

Lead—The market is firm with prospects of rising prices next month.

Zinc—Keeping ore production down appears to be a difficult job, but smelters manage to maintain prices for the metal.

Crude Oil Production Increases in August

NEW YORK, Aug. 22—Daily average gross crude oil production in the United States for the week ending Aug. 18, 1928, according to the American Petroleum Institute, was 2,444,500 bbl. as compared with 2,389,200 bbl. for the preceding week.

Imports at the principal United States ports for the week ended Aug. 18 totaled 1,727,000 bbl., a daily average of 246,714. This compares with 1,363,000 bbl., a daily average of 194,714 bbl. for the week ended Aug. 11 and a daily average of 251,500 bbl. for the four weeks ended Aug. 18.

100 Motor Car Unit is Given Army Test

Trip of 426 Miles Demonstrates Advantages of Modern Equipment

BALTIMORE, Aug. 22—The longest experimental trip ever taken by a completely motorized military unit ended at Camp Leonard Wood, Maryland, last week when 100 automotive vehicles returned from a trip to Tobyhanna, Pa. The trip covered 426 miles and the only stop made was over night at Tobyhanna. Col. Oliver S. Eskridge, in command of the force, declared the experiment a success. Although the trip was over hilly and mountainous country only minor mechanical difficulties were encountered.

Although there was a slight delay in the schedule of the return trip, this was due to heavy rains and not to inability of the vehicles to stand up under the test. The long trip was arranged to test the motor equipment for speed, stamina and control. Only pneumatic-tired and modern vehicles were used. The line included an armored-car troop, rifle company, machine gun company, battery of field artillery and detachments of engineers, ordnance and signal troops.

The test was the third made by the force and was the longest and most difficult. Previous trips were to Upper Marlboro, Md., and to Gettysburg, Pa.

British Railroads Win Right to Operate Motor Vehicle Lines to Offset Competition

LONDON, Aug. 14 (*by mail*)—As forecasted some time back in *Automotive Industries* the British railroads were successful in securing the passage through Parliament of the bill authorizing them to run motor vehicles for passengers and freight in direct competition with existing motor haulage companies, whose activities have taken from the railroads such a large proportion of their most profitable class of business.

If a regular service has been commenced it must not be withdrawn without the sanction of the Ministry of Transport; the object of this seemingly harsh condition is to prevent the railroads from driving existing services out of business by their competition and then withdrawing their buses so as to force passenger traffic back to the railroad.

Automobile interests secured the insertion of a clause which, in effect, prevents the railroads not only from manufacturing chassis themselves but also from financing subsidiary or existing manufacturing undertakings.

The fares charged to passengers and the rates for freight must be approved by the existing Railway Rates Tribunal appointed by the government. If the fares or rates are considered too high, local authorities or organizations of traders can apply to the tribunal to have them reduced, while if they are considered of a "cut-throat" character by competitors the latter have the right to appeal for them to be increased.

Annual returns of capital involved in road services by the railroad companies and statements showing profit or loss on working must be made to the Ministry of Transport, in order to prevent them from "bolstering up" their road services with funds derived from other sources.

Although the bus and haulage companies already operating in many parts of Great Britain are almost certain to suffer directly or indirectly through the pending competition of the railroad companies in road transport, the passing of the act should benefit truck and bus manufacturing companies, and already there have been extensive upward movements in the market prices of their shares in anticipation of increased outputs and profits. It is to be noted, however, that nothing in the act will prevent the railroads from purchasing imported chassis, and there has already been noted a disposition on their part to do so in some cases.

Long Life Features New Gabriel Product

CLEVELAND, Aug. 20—A new type of shock absorber, the nature of which is not disclosed, will be manufactured shortly by the Gabriel Snubber Mfg. Co., George H. Ralls, president of the company, said today.

"For more than a year engineers and designers in our laboratories have been at work on a device which would meet the most exacting demands of modern automobile design," said Mr. Ralls. "That device now has been finally perfected. Tests have demonstrated that the new product will have a life considerably in excess of the life of the automobile on which it is installed, and that it will operate efficiently for years without perceptible wear and tear" occurring.

Mr. Ralls did not state the date when production of the new shock absorber would begin. He said production of the Gabriel snubber will be continued, to meet demand from both automobile manufacturers and car owners, in this country and abroad.

John C. Dix & Co. Expands

MEMPHIS, TENN., Aug. 20—The John C. Dix Son & Co., Memphis, manufacturer of automobile bodies, announces an increase in the company's capital from $50,000 to $120,000, and plans for expanding the facilities of the plant. A two-story building has been acquired here and equipment is being installed, giving the company an increase of about 100,000 sq. ft. in its floor space.

Coming Feature Issues of Chilton Class Journal Publications

Oct. 10—Marketing Annual for 1929—Motor World Wholesale.

Nov. 17—Production and Factory Equipment Issue—Automotive Industries.

Maryland Lifts Tolls From "Gold Mine" Bridge

BALTIMORE, Aug. 18—Maryland's famous "gold mine" bridge, over the Susquehanna river between Havre de Grace and Perryville, is to be free of tolls within the next few weeks. Motorists will be permitted to cross the river at this point without charge for the first time, as the bridge was a toll structure long before the automobile was invented for general use.

Tolls were continued beyond the time originally planned to meet costs of modernizing the structure.

The bridge is a link of the important road between New York, Philadelphia and the North, and Baltimore, Washington and the South. Another bridge spans the river many miles north of the Havre de Grace-Perryville structure and no charge is made to cross this. However, it is not generally as convenient.

Announcement that the toll would be lifted about Sept. 15 has been made by John N. Mackall, chairman of the Maryland State Roads Commission.

Stutz Special Wins Altoona Feature Race

ALTOONA, PA., Aug. 20—Louis Meyer drove his Stutz Blackhawk Special 200 miles without a stop and captured the Altoona speedway's international classic yesterday before a crowd of 65,000 persons. He circled the bowl in 1 hour, 42 minutes and 54 seconds, averaging 117 m.p.h. over the board course. This is Meyer's second major victory of the present year, he having captured the Indianapolis honors on Memorial day.

Bob McDonogh, San Francisco, driving the Flying Cloud car of last year's champion, Peter De Paolo, finished second, riding in first and second positions during the entire race. He trailed Meyer, the winner, by less than three miles. McDonogh's time was 1 hour, 43 minutes, 43 seconds.

Other finishing drivers were Fred Comer, Boyle Valve Special; Billy Arnold, Boyle Valve Special; Dave Evans, Insurance Special; Ray Keech, Simplex Piston Ring Special, and Elbert "Babe" Stapp, Miller Special.

In a 5-mile match race, Leo Duray won in 2 minutes, 18 seconds, averaging 130 m.p.h. Bob McDonogh was second; Ray Keech, third, and Cliff Woodbury, fourth. In the 10-mile sprint Ralph Hepburn won in 4 minutes, 42 second, averaging 127.5 m.p.h.

Build 50 Planes Monthly

DETROIT, Aug. 20—Approximately 50 airplanes are being manufactured every month by the three aircraft factories now operating in Detroit.

Calendar of Coming Events

SHOWS

Aeronautical Exposition, Coliseum, Chicago .....Dec. 1-9
American Electric Railway Ass'n, Public Auditorium, Cleveland..Sept. 22-28
American Road Builders Association, Inc., Cleveland Auditorium..Jan. 14-19
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-12
American Welding Society, Commercial Museum, Philadelphia.....Oct. 8-12
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
Berlin .....Nov. 8-18
Boston, Mass., Mechanics Bldg...March 2-9
Brussels .....Dec. 8-19
Buenos Aires .....Nov. 29-Dec. 9
*Chicago, National, Coliseum, Jan. 26-Feb. 2
International Aviation Exposition, Berlin .....Oct. 8-28
Leipzig .....Aug. 26-Sept. 1
London, passenger cars .....Oct. 11-20
Montevideo .....Nov. 10-19
National Air Races, Los Angeles.Sept. 11-12
National Standard Parts Association, Cleveland Auditorium...Oct. 29-Nov. 3
*New York, National, Grand Central Palace .....Jan. 5-12
Paris, passenger cars .....Oct. 4-14
Paris, trucks .....Nov. 15-25
Prague .....Sept. 1-9
Salon, Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 26-Feb. 2
Salon, Automobile Salon, Inc., Hotel Biltmore, Los Angeles.....Feb. 9-16
Salon, Los Angeles Motor Car Dealers' Association, Biltmore Hotel..Oct. 17-20
Salon, Automobile Salon, Inc., Hotel Commodore, New York .....Dec. 2-8
Salon, Automobile Salon, Inc., Palace Hotel, San Francisco...Feb. 23-Mar. 2

*** will have special shop equipment exhibit.**

Toronto, Can. .....Aug. 24-Sept. 8
Western States Metal and Machinery Exposition, Los Angeles.....Jan. 14-18

CONVENTIONS

American Electric Railway Ass'n, Public Auditorium, Cleveland...Sept. 22-28
American Gear Manufacturers Association, Statler Hotel, Buffalo, N. Y., Oct. 11-13
American Institute of Mining and Metallurgical Engineering, Metals Division, Benjamin Franklin, Philadelphia .....Oct. 8-12
American Manganese Production Association, Mayflower Hotel, Washington .....Sept. 10-11
American Road Builders Ass'n, Inc., Cleveland Auditorium .....Jan. 14-19
American Society for Steel Treating, Commercial Museum, Philadelphia .....Oct. 8-12
American Society for Steel Treating, Semi-Annual Meeting, Los Angeles .....Jan. 14-18
American Welding Society, Commercial Museum, Philadelphia.....Oct. 8-12
Automotive Equipment Association, Coliseum, Chicago .....Oct. 22-27
International Air Conference, Washington .....Dec. 12-14
Machine Tool Congress, joint meeting with Machine Shop Practice Division, American Society of Mechanical Engineers, Cincinnati, Sept. 24-27
Mid-West Motor Truck Transportation Congress, Indianapolis..Oct. 23-26
Motor & Accessory Manufacturers Association, Credit Managers Conference, Hotel Statler, Buffalo..Sept. 12-14
National Battery Manufacturers' Association, Ambassador Hotel, Atlantic City .....Sept. 20-21
National Highway Congress, Mexico City .....Oct. 3-6
National Metal Congress, Los Angeles .....Jan. 14-18
National Safety Council, National Congress, New York .....Oct. 1-5
National Standard Parts Association, Hollenden Hotel, Cleveland. Oct. 29-Nov. 3
Ohio Council, National Automobile Dealers Association, Hotel Gibson, Cincinnati .....Sept. 13-14
Society of Industrial Engineers, Rochester, N. Y. .....Oct. 17-19
World Motor Transport Congress, Rome .....Sept. 25-29

A. S. M. E.

Cincinnati, Oct. 22-25 — Machine Shop Practice.
Cleveland, Sept. 17-20—Fuels.

S. A. E.

National

Chicago, Dec. 6-7—Aeronautic.
Detroit, Book-Cadillac, Nov. 22-23—Production.
Detroit, Book-Cadillac, Jan. 15-18—Annual.
Los Angeles, Sept 11-12—Aeronautic.
Newark, Robert Treat Hotel, Oct. 17-19—Transportation.
New York, Hotel Astor, Jan. 10—Annual Dinner.
Syracuse .....Sept. 1

RACES

Great Britain .....Sept. 22
Italy .....Sept. 2
Salem .....Oct. 12